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CONTENTS

OF

VOL. XII.—PART I.

Page

I. Four Cases of Children, who had attempted, by mistake, to drink boiling Water from the Spout of a Tea-kettle; with Observations on the Seat and Treatment of the Effects of this Accident. By Marshall Hall, M.D. F.R.S. Ed. &c. of Nottingham. Communicated by Dr. Farre 1

Appendix to the preceding Paper, by Edward Stanley, Esq. Assistant Surgeon, and Demonstrator of Anatomy, at St. Bartholomew's Hospital 8

II. A Case of Aneurism, in which a Ligature was placed on the Subclavian Artery. By Charles Mayo, Esq. Surgeon to the County Hospital in Winchester. Communicated by Mr. Stanley 12

III. A Case of Bronchotomy, successfully performed, for the Removal of a Pebble from the Trachea. By William S. Hunt, M.D. of Dartmouth. Communicated by Henry Earle, Esq. 27

Observations on the preceding Case, by Henry Earle, Esq. 32

Page

IV. Account of a singular Variety of Urine which turned black soon after being discharged; with some Particulars respecting its Chemical Properties. By Alexander Marcet, M.D. F.R.S. late Physician to Guy's Hospital. . . 37

Note, by W. Prout, M.D. F.R.S. on the Chemical Properties of the black Urine . . . 43

V. Case of the Extraction of a living Fœtus from a Woman killed by Violence. By J. H. Green, Esq. Surgeon to St. Thomas's Hospital. . 46

VI. Account of a Man who lived ten Years after having swallowed a number of Clasp-knives; with a Description of the Appearances of the Body after Death. By Alexander Marcet, M.D. F.R.S., &c. late Physician to Guy's Hospital . 52

Appendix, No. 1. A Letter from Dr. Lara, Surgeon to his Majesty's Ship Isis, dated Portsea, Hants, March 27, 1809; found among the Papers of the late Dr. Curry, Physician to Guy's Hospital 64

Appendix, No. 2. Narration of John Cummings, drawn up by himself 70

VII. History of a Case of premature Puberty. By John Flint South, Esq. 76

VIII. On the Product of Acute Inflammation. By Thomas Dowler, Esq. Communicated by Sir Astley Cooper, Bart. 86

Note on the preceding Paper, by John Bostock, M.D. F.R.S., &c. &c. one of the Vice-Presidents of the Society 94

IX. A Case of Inguinal Aneurism successfully treated by tying the External Iliac Artery. By

Page

Edward Salmon, Esq. Surgeon to the First Battallion of the Third Regiment of Guards. Communicated by Mr. Earle 95

X. Observations on the Use of the Cubebs, or Java Pepper, as a remedy for Gonorrhea. By S. D. Broughton, Esq. Member of the Royal College of Surgeons; Surgeon to the St. George's and St. James's Dispensary, and to the Second Regiment of Life Guards 99

XI. On Partial Paralysis. By John Shaw, Esq. Lecturer on Anatomy, Great Windmill Street 105

XII. An Account of some Circumstances, under which a Hæmorrhage may occur, sufficient to produce alarming Symptoms, though the Uterus feels contracted in the ordinary degree. By Robert Gooch, M.D. Physician to the Westminster Lying-in Hospital, and Lecturer on Midwifery at St. Bartholomew's Hospital . 152

XIII. Observations on Compound Fractures. By John Dunn, Esq. Surgeon, Scarborough. Communicated by Mr. Samuel Cooper . . . 167

XIV. A Case of Umbilical Hæmorrhage, which terminated fatally. By G. Pout, Esq. Communicated by Sir Astley Cooper, Bart. . . 183

XV. Case of Vaccine Disease and Measles, existing at the same Time in the same Individual. By S. Gilder, Esq. Assistant Surgeon to the Coldstream Guards. Communicated by Mr. Hunter 186

XVI. Cases of Ununited Fracture of the Humerus, treated by Seton, and the application of Caustic Potash. By Henry Earle, Esq. F.R.S. Assist-

Page

ant Surgeon to St. Bartholomew's Hospital, and Surgeon to the Foundling Hospital. . 189

XVII. Case of a Wounded Nerve of the Thumb, followed by severe Symptoms, which were relieved by a division of the Nerve. By J. Wardrop, Esq. Surgeon Extraordinary to the King 208

XVIII. On the Varieties of Diseases comprehended under the Name of Carcinoma Mammæ. By Charles Bell, Esq. F.R.S. Ed. Surgeon to the Middlesex Hospital, and Lecturer on Anatomy in Great Windmill Street 213

XIX. Account of a Stone and of a Portion of a Catheter extracted from the Female Bladder by a Dilator; with an Appendix by Mr. Chapman of Wandsworth, and by Mr. Birt, of Diss, Norfolk, on the removal of a Catheter and of a Stone from the Female Bladder, by Dilatation. By Sir Astley Cooper, Bart. F.R.S. Surgeon to the King, and Surgeon to Guy's Hospital. . 235

XX. Case of a Large Glandular Tumor in the Neck removed by I. P. Vincent, Esq. Surgeon to St. Bartholomew's Hospital 247

References to the Plates 251

FOUR CASES

OF

CHILDREN

WHO HAD ATTEMPTED, BY MISTAKE, TO

DRINK BOILING WATER FROM THE SPOUT OF A TEA-KETTLE;

With Observations on the Seat and Treatment of the Effects of this Accident.

By MARSHALL HALL, M.D. F.R.S. Ed. &c.
OF NOTTINGHAM.

COMMUNICATED
By Dr. FARRE.

Read April 3, 1821.

I AM not aware that the following accident has been described by any previous observer. I have therefore thought that an account of four cases of it, which have fallen under my notice, might not be deemed unworthy of a place in the Medico-Chirurgical Transactions.

It is the custom with some poor and inconsiderate mothers to allow their children to drink through the spout of the tea-kettle, on returning from replenishing this utensil at the spring or pump. This practice has led, in many instances, to the fatal or dangerous accident about to be described. The children have afterwards attempted to drink through the spout of the tea-kettle, when it has but shortly

before been taken boiling from the fire, supposing it still to contain cold water.

The effects of this accident are not, as might be supposed, *à priori*, the symptoms of inflammation of the œsophagus and stomach, but of inflammation of the glottis and larynx, resembling those of *croup;* and the case constitutes another instance in which the operation of laryngotomy, or of tracheotomy, may be performed with the effect of preventing impending suffocation, and perhaps of saving life.

It appears probable, indeed, that the boiling water does not actually penetrate into the stomach, or even into the gullet, but that its course is arrested by a spasmodic action of the muscles of the pharynx. In passing to the posterior part of the mouth, however, it scalds the epiglottis and glottis, which afterwards become more and more swollen, until at length the rima glottidis, or orifice into the larynx, becomes completely obstructed.

Of the four patients whose cases are about to be given, one recovered from imminent suffocation immediately after violent screaming; two died from suffocation—one 10, the other 17 hours after the accident; the fourth was completely relieved by the operation of tracheotomy—survived 34 hours, but died, exhausted by the irritation produced by the primary affection.

CASE I.

A. Litchfield, a little girl, aged three years, attempted to drink through the kettle-spout, a few minutes after it had been removed from the fire in a boiling state. She had no assistance for three or four hours, during which period a difficulty in respiration came on, and gradually augmented. A medicine, containing oil and syrup, was recommended. The dyspnœa continued to increase, and the little patient was bled from the jugular vein; the difficulty in respiration still, however, became more urgent, and threatened suffocation. At this period leeches were prescribed, and directed to be applied to the throat. The little girl was much terrified on seeing the leeches, and screamed violently, so that they could not be made to apply. From this moment, however, the respiration became comparatively easy; and the little patient recovered completely in the course of a week, and still remains well.

The parents of this child suppose that the violence of the screaming ruptured the vesicles by which the breathing was impeded, and thus proved an unexpected means of cure.

CASE II.

John Langton, aged two years. In August 1816, about eight o'clock in the morning, and just after the water had boiled for breakfast, he attempted to drink through the kettle-spout. He cried out immediately. In about four hours, he began to labour and ruttle in breathing; the dyspnœa increased gradually; at length, the face became livid, and the feet cold, and he died from suffocation, about 17 hours after the accident.

There was not much difficulty in swallowing, and there was no vomiting.

The dyspnœa resembled that observed in the croup, and the noise was so great as to be heard at a considerable distance.

The little patient was bled from the arm, and oil and syrup were given, but without any appearance of benefit.

CASE III.

A little girl, aged two years and a half, about four o'clock in the afternoon, attempted to drink through the spout of a tea-kettle, which had been just taken off the fire with a view of preparing tea. She screamed out; her mother carried her to a

surgeon; on her return home, the little patient began to breathe with difficulty, and with a rattling noise. She could swallow, however, and there was no vomiting; she instantly cried out, indeed, for something to drink.

The difficulty and rattling in breathing increased, and the respiration was performed with great effort, the integuments of the neck near the trachea being drawn inwards at each inspiration.

This little girl lay some hours as if she were gasping her last, and died suffocated, and rather suddenly, at two o'clock, ten hours after the accident, having previously become pallid and cold.

CASE IV.

A little girl, aged two years and half, attempted to drink through the spout of a new tea-kettle, which had boiled only ten minutes before. The mother was brought up stairs by the cries of another child; she sent for her medical man, who prescribed oil, mucilage, and syrup.

On seeing this little girl five hours afterwards, I found it affected with difficulty in breathing, with a hoarse croupy noise, referred to the top of the larynx. It was able to swallow without manifest pain, or coughing. The tongue and all the inter-

nal parts of the mouth were blanched and blistered. The pulse was frequent.

The dyspnœa gradually increased. To prevent impending suffocation, tracheotomy was performed at half after four o'clock, A. M. twelve hours after the accident. The relief was immediate. The little patient sat up, played, and looked cheerful. The voice was extinct. The respiration was free through the orifice made into the wind-pipe.

At ten o'clock, A. M. the difficulty in breathing had much returned. The face was pale, and the child appeared to be dying. In the afternoon, however, it was better, the difficulty of breathing being again much relieved. It swallowed imperfectly, a little passing, at each attempt, into the trachea, and being returned through the orifice by coughing. The little patient seemed once more to be in a promising state.

The next day at ten o'clock, A. M. the little girl was worse, and apparently sinking. The respiration was not, however, difficult; but the pulse was almost imperceptible, and the extremities cool. She died at half after two o'clock, P. M. thirty-four hours after the operation, apparently from the exhausting influence of the original disease.

On dissection, there was observed a swollen, blistered, and corrugated state of the epiglottis;

and a similar state of the posterior fauces, tongue, and internal mouth. There was a little mucus in the larynx, but no perceptible morbid condition of the œsophagus or stomach. There was no inflammation of the trachea, not even near the orifice made by the operation.

Such have been the symptoms and results of the cases of this accident, with which I have hitherto become acquainted. The important question now is, what should be the plan of treatment in any future case? If the suffocation were imminent, I should not hesitate to propose the operation of laryngotomy or tracheotomy, and the former would appear to reach below the seat of this affection. But I now regret that I did not propose the scarification of the epiglottis and glottis, so as to evacuate the blisters. I have also conjectured that it might be possible to enlarge the orifice into the larynx, either by removing a portion of its edges, by means of a cutting instrument of a proper form, or by introducing a tube; the latter expedient appears to be particularly adapted to a case which *time* would cure, and which would not probably be materially aggravated by a cause of irritation.

Nottingham, February, 1821.

Appendix to the preceding paper by EDWARD STANLEY, Esq. *Assistant Surgeon and Demonstrator of Anatomy at St. Bartholomew's Hospital.*

When the preceding cases were read at the Society, they excited considerable attention, and as it appeared that no one of the many members present had met with such a case, the addition of the two following may not be unacceptable. They occurred during the last year, one in the practice of my friend Mr. Gillman, Surgeon, at Highgate, the other in St. Bartholomew's Hospital. Mr. Gillman has obligingly furnished me, in a letter, the following account of his case for the use of the Society.

THE subject of the case, to which you refer, was a girl of between three and four years old. The eldest sister, during the absence of the parents, and in expectation of their return, had boiled some tea in a tea-kettle; had taken it off the fire, and placed it on the hob. She then, it appears, stepped out of the room, when the little one, being thirsty, and availing itself of the sister's absence, swallowed a portion from the spout of the kettle. This occurred about seven in the evening, and the mother, on her return, about an hour afterwards, brought the child to my house. The child had been vomiting, during the interval, violently, and was extremely exhausted. The saliva flowed copiously from the mouth, the child having apparently lost all power of swallowing it. Its pulse was small, quick, and feeble; and it referred, as well as it could, the pain

and distress to the stomach, pressing it with its hand. Some oil of almonds in gruel was directed to be given it, with two drops of tincture of opium every four hours, and an aperient medicine in the morning. The case, even in this early period, seemed hopeless. In the morning the child was worse; during the night it had vomited, with little intermission, and was incapable of retaining any thing in its stomach. It now manifested great difficulty of breathing, had a short cough, and threw its head back, as in croup; its pulse was quick and feeble, and its skin cold and clammy. Some leeches were directed to be placed over the trachea, but as the child complained chiefly of its stomach, the attendants placed the greater number at the scrobiculus cordis. The difficulty of breathing increased during this day, and the case assumed still more the appearance of croup; the pulse became more feeble, the skin colder, the face swollen and livid, and the poor little thing continued struggling to exist till the following morning, when it died, thirty-eight hours after the accident. On inspection of the body after death, the whole interior of the mouth, the fauces, pharynx, and the œsophagus, to within a short distance of the cardiac orifice of the stomach, presented the usual appearances of a scald, and the cuticle was easily peeled off from parts of the tongue and upper part of the œsophagus. The lining of the stomach was reddened, not more so, however, than may be perhaps rationally attributed to the previous vomiting; but the lining of the

trachea was much inflamed, and on different parts deposition of lymph was found adhering.

On a review of the facts, and supposing a case of this kind to recur, the general impression on my mind, I remember, was, that my treatment would be much more decisive, the same indeed, or nearly so, as in croup, different as the cause and origin of the symptoms may be. But where the pain and danger from the immediate affection of the organs are so intense and so urgent, what can we do, with rare exceptions, but attend to the symptoms and attempt their alleviation?

JAMES GILLMAN.

Highgate, July 24th.

The case in St. Bartholomew's Hospital, occurred in a child about three years old, who had attempted to swallow some boiling water from the spout of a tea-kettle. The child lived twelve hours after the accident. During the first part of the time it was restless, but with little acceleration of pulse or disturbance of respiration. Without being able to fix upon any particular symptom which positively indicated affection of the brain, this organ was generally believed to be the principal seat of disorder—an opinion which was formed from the appearance of its countenance, which was sunk, the entire absence of all its natural vivacity, and the gloominess of aspect which succeeded. The restlessness gradually subsided as the vital powers de-

clined, and it died with scarcely a struggle. Such was the obscurity of the symptoms, that the only remedies employed were purgatives, which emptied the bowels freely.

Upon examination of the body, a slight effusion of transparent fluid was found between the tunica arachnoidea and the pia mater, and into the cellular texture of the latter. About three drachms of a similar fluid were found in the lateral ventricles of the brain. The vessels of the brain were not preternaturally turgid. There was a slight redness and tumefaction in the mucous membrane of the pharynx, and upper part of the larynx, above the opening of the glottis. The glottis was of its natural diameter; the morbid appearances were just sufficient to show that irritation had existed in the parts. The trachea, œsophagus, and stomach were of a healthy appearance.

A

CASE OF ANEURISM,

IN WHICH

A LIGATURE

WAS PLACED UPON

THE SUBCLAVIAN ARTERY.

By CHARLES MAYO, Esq.

SURGEON TO THE COUNTY HOSPITAL IN WINCHESTER.

COMMUNICATED

By Mr. STANLEY.

Read June 12, 1821.

THOMAS WARNER, aged thirty-eight, was admitted into our Hospital on the 16th February, 1821, with a pulsating tumour immediately below the left clavicle, which was readily ascertained to be an aneurism of the axillary artery. His employment was that of a fisherman, which was very laborious, and constantly exposed him to the inclemency of the weather. He had enjoyed perfect health, till, about nine months ago, he had a severe attack of rheumatism, which left him subject to pains in his limbs, but more particularly in his left arm; it was not, however, till about three months previous to the present time, that he perceived the swelling below the clavicle, which he stated to have been small in the beginning, and always pulsating; the weakness and pain in the arm increasing in proportion to the augmentation of its size.

The swelling, when first examined by myself, was of an oblong form, lying just below and parallel with the left clavicle, and might be covered with the half-closed hand; it pulsated strongly, but, by pressure upon the artery above the clavicle, the pulsations could be entirely stopped.

February 17th, the day after his admission, he overheard a conversation relative to the necessity of an operation, which induced him to leave the Hospital, and return to his home. Another month passed away before he was prevailed upon to return to the Hospital, when I found that the tumour had extended farther in every direction; the pulsation in it was very strong, and the artery above the clavicle was compressed with greater difficulty; yet the clavicle appeared to be but little elevated, and the tumour seemed rather to overlap the bone. The pulse at the wrist was the same as in the sound arm. He complained of severe pain and irritation in the breast, shoulder and arm, which had prevented him from lying down for the last three weeks; and he was now anxious to submit to any operation. On the day after his arrival, the arm and elbow ached intolerably; his pulse being 90 and full, I took ℥xviij of blood from the arm, which tranquillized him greatly; he took afterwards a dose of physic, and an opiate at bed-time. The blood drawn showed no marks of inflammation; and, on the next day, he became cheerful, and comparatively free from pain.

March 19th.—According to appointment with my colleagues, I performed the operation of tying the left subclavian artery this day at noon. The man was laid on the operating-table, with his shoulders a little raised, and his legs hanging over the table, and resting on a chair. I made a transverse incision, about two inches and a half in length, along the upper edge of the clavicle, and from the middle of this incision I made another directly upwards along the outer margin of the sterno-cleido-mastoideus muscle; I then dissected back the triangular flaps, thereby exposing the edge of the mastoid muscle, and the omo-hyoideus, which crossed the upper angle of the wound. In the space between the latter muscle and the clavicle, I now felt the artery with the end of my finger, and then proceeded to expose it fairly by removing the cellular tissue which covered it. This cellular tissue was partly divided by a few cautious touches of the scalpel, and partly detached from the vessel by the handle of the instrument. I next directed my assistant to draw the nerves a little outwards with a hook, and then, passing my finger into the bottom of the wound, I felt the artery distinctly upon the rib, and, pressing upon it, stopped the pulsations in the tumour. I touched the cellular tissue cautiously on each side of the artery with the edge of the scalpel, but still could not raise it from the rib with my nail; it seemed firmly attached in its situation. I tried to pass probes and other instruments beneath the vessel, but ineffectually. At length,

I insinuated the tip of Desault's elastic needle under the outer side of the artery, and, holding the canula firm upon the rib, I desired the assistant to press down the stilet, which caused the needle to pass under the artery; but I had some difficulty in bringing its extremity up on the other side, as it constantly hitched in the neighbouring fibres of the scalenus and mastoid muscles, the great flexibility of the needle allowing its course to be altered by the slightest obstacles; at last, by catching the point with my nail, I was able to guide it round the vessel, while my assistant pressed it forward; I next threaded the needle with a strong round ligature, and cautiously withdrew it into the canula; then, bringing the double ligature under the artery, I cut it from the needle. The two portions of ligature were now separated from each other as much as possible, and one was tied; then, with the assistance of Mr. Ramsden's iron instruments for tightening the ligature, the knot was drawn, the inner coats of artery were sensibly divided, and the pulsations in the tumour ceased; a second knot was then made, and tightened in the same manner. I now attempted to withdraw the loose portion of ligature, but found that it was so connected with that which had been tied, as not to allow of its being withdrawn without force; therefore I let the whole remain. The ligatures were brought out at the lower part of the wound, the edges of which were approximated by strips of plaster, and over this a light compress was confined. The artery

was more deeply situated, and more difficultly exposed, than I expected; but the operation was completed in about twenty minutes. The hæmorrhage was trifling: a large vein was exposed just behind the upper edge of the clavicle, which was carefully avoided. The patient was quite easy in the rest of the day after the operation; but, having some pain in the elbow at night, he took an opiate draught, and some opening medicine was administered in the morning.

March 20.—I found that he had passed a good night, and had suffered very little inconvenience from the wound. The medicine had acted beneficially; the pulse was about 85, and the temperature of the left arm equal to that of the other; the tumour was flattened and soft. The dressings were removed, when we found that the wound had united, except where the ligature passed out. In the evening he complained greatly of painful and distressing sensations about the elbow, and was extremely restless; and I now felt a return of pulsation in the tumour; it was slow and intermitting, but felt pretty strong when the tumour was firmly pressed: there was also an obscure pulsation in the artery at the wrist. He took tinct. opii m. XLV., and had the arm embrocated with soap liniment and laudanum.

March 21.—He had had a very restless night, and complained bitterly of the pain in the neck, shoulder, and arm. The pulsation in the sac was

stronger; the pulse in the sound arm was rather weak and intermitting. I took eighteen ounces of blood from the arm, which produced syncope; but as it flowed at first, the pulse rose, and became more regular. He seemed much easier afterwards, and disposed to sleep. The blood was much cupped and buffed. I ordered him a saline mixture, with small doses of Tinct. opii, every four hours; in the evening the pains in the arm and elbow again distressed him so much, that I gave him Tinct. opii m. LX.

March 22.—He was, upon the whole, better than yesterday. I dressed the wound; from which I wiped a small quantity of pus, where the ligature passed out; and afterwards gave him some opening medicine. The pulsation in the sac was much the same, and the very weak pulse at the wrist remained. In the evening he was again excessively distressed with pain in the arm and back of the shoulder, attended with a burning sensation, as if boiling lead were running down his breast and back. The pulse was weak and intermitting as before; but, as he seemed relieved by bleeding yesterday, I again took blood from him to the amount of f℥xvj; after which the pulse rose and became regular. On visiting him at midnight, I gave him Tinct. opii m. LX., and waited to see the effects of the dose. In about a quarter of an hour he became restless, and complained of severe pain and uneasiness at the back part of the shoulder. I then applied a dozen leeches

to the painful parts, which relieved him, as did the warm fomentations which I afterwards ordered.

March 23.—He felt much more composed than yesterday. The uneasiness in the shoulder returning, in the afternoon sixteen leeches were applied. He took fifteen minims of the black drop at bed-time, and was ordered a dose of castor oil early in the morning.

March 24.—The pulsation in the sac is more regular and less laboured; the distention of the tumour does not increase. He passed the day in comparative ease, and repeated the black drops at bed-time.

March 25.—In the evening of this day, I was called to him on account of some bleeding from the wound; when I found that the nurse, on changing the wet compress which was laid over both the tumour and wound, observed it to be tinged with florid blood. I removed the dressing and sponged the wound; some small coagula hung about the ligature, but there was no further appearance of hæmorrhage. He said that he felt a hot and pricking sensation about the part, just before the blood was observed; the pulsation in the sac was more violent than it had been since the operation, and indeed was nearly as strong as at any time previous to its performance; the distention was also in-

creased. I did nothing further than replace the compress. On the following morning, he was awakened by the pricking sensations before described, and shortly after perceived something wet and warm running down his side into the bed, which the nurse discovered to be blood; when I arrived he had lost nearly a pint of blood, which appeared to be arterial; he was pale and shivering with cold. The nurse had held a compress on the wound according to my direction, and on removing the pressure there was no further hæmorrhage, even after sponging the parts rather roughly; but the most remarkable circumstance was the complete cessation of the pulsation in the sac, and the reduction of the tumour to one third of its previous dimensions.

March 26.—There had been no return of pulsation in the sac or hæmorrhage from the wound; a small quantity of bloody sanies was pressed out from the latter every time it was dressed. The tumour is quite flattened and sunk, the arm easy, but a little numbed, though as warm as the other. He feels weak and tired, and has remained in bed all day; the pulse was ninety-six and soft; the tongue and skin moist.

March 27.—He is free from pain, and has slept well without his opiate; he complains of being faint and low; pulse seventy-eight.

March 28.—He had a severe shivering fit last night, after I left him; for which the apothecary gave him Tinct. opii m. LX. at two doses, which stopped the rigors, and they were succeeded by profuse perspiration; the pulse was 120 this morning, and he had been slightly delirious. The wound looked well, and the tumour seemed to be rapidly subsiding. He dosed a good deal during the day; but, about four in the afternoon, he awoke in such a state of restlessness that it was thought right to give him Tinct. opii f3ss., which had the effect of quieting him; he, however, still complained much of an odd sensation and numbness in his fingers, which he rubbed and scratched violently with the other hand. In the evening the pulse was 108.

March 29.—He had passed but an indifferent night, the fever still continuing, with delirium and much thirst. About eleven this morning he had a slight shivering fit, and soon after a fresh accession of fever; at twelve I took f℥xvj of blood from the arm, which made him faint, but produced a very trifling alleviation of his symptoms, and no abatement in the quickness of the pulse. The blood was much cupped. He took calomel and jalap, and afterwards some salts, which produced four or five loose stools. The restlessness not being relieved by these proceedings, he took Tinct. opii f3ss in the afternoon. In the evening he lost about half a pint of blood from the wound. I removed the dressings, and sponged the wound, but no discharge came from

it, even after squeezing it on all sides. He was cold and faint. I laid a compress of lint on the wound, and left one of the pupils to watch him. At eleven I saw him again, he had taken a grain of opium, and was dosing. The pulse had recovered its quickness, but was weaker.

March 30.—The hæmorrhage returned at three o'clock this morning, but was directly suppressed by pressure. He had been pretty quiet during the night, but at intervals was rambling and delirious; the pulse was 120, and the thirst almost insatiable. I ordered him a saline mixture, with small doses of tartarized antimony, which seemed to lessen the frequency of the pulse, but induced so much nausea, that it was discontinued. About two o'clock he had a severe shivering fit; after which he took Tinct. opii m. LXV. at two doses, which quieted him, and, with the assistance of other stimuli, restored warmth. At eight in the evening he lost some blood from the wound, which, although the quantity was small, produced extreme faintness.

March 31.—He had somewhat revived since yesterday, and had passed a tolerable night, during which he took a mixture, with confectio opii and æther, to relieve flatulency. The pulse at the right wrist was very weak and irregular. Slight bleeding again took place from the wound; he became weak and faint, and the pulse could no longer be felt; wine and other stimuli were given him, but he

did not revive, though quite sensible when roused; he sunk gradually and died about five o'clock in the afternoon.

April 1st.—Dissection.—The aneurismal sac was exposed by the reflexion of the pectoralis major and minor muscles; its lower boundary extended to the inferior margins of the third rib; and above, it extended beneath the clavicle to the first rib; laterally it reached from the axilla to the sternum. The axillary vein was found exterior to, and firmly united to the sac, at its inferior part. Three or four large nerves of the axillary plexus were stretched over the middle of the sac. In the further progress of the examination, the following circumstances were noticed:—The aorta appeared thinner than usual, and the carotids were in some parts so thin as to be transparent. The left subclavian artery was completely divided at the part where it had been tied, and the two portions of the vessel were separated about a quarter of an inch from each other, the ligature being retained by a few cellular threads in the midspace between them. The extremity of that portion of the artery connected with the sac, was much contracted, and completely filled by coagulum. The portion next to the heart was not in any degree contracted, and its cavity was open to the extremity, which was, in part only, filled by lymph. This lymph closed the orifice of the artery, except at one part, where there was an aperture that would receive the end of a probe be-

tween the lymph and the extremity of the vessel, and leading directly into the cavity of the latter. Five large branches, viz. the vertebral, internal mammary, cervicalis profunda, superior intercostal, and inferior thyroideal, arose from the artery between its origin and the ligature. These branches arose close together, and at a distance of only half an inch from the part where the artery had been tied. The right side of the heart was filled with blood; the lining of the thoracic aorta was partially thickened by a pulpy substance, deposited beneath it. Some small shreds of coagulable lymph were found on the pleura. The upper lobe of the left lung was observed to adhere to the pleura costalis, and when separated from it, I discovered that the posterior part of the tumour had penetrated the chest, so that the sac was here in contact with the pleura. The sac contained about a tea-cup full of recent coagulum, and some large masses of lamellated fibrine. The sternal extremities of the three first ribs were in a great part absorbed; the brachial artery was not in any degree contracted, and was quite pervious to its termination in the sac. Immediately below the sac, a large branch arose from the artery, almost equal in size to the trunk, and immediately divided into the infra-scapular and two circumflex arteries.

Remarks:—It remains for me to observe upon the peculiarity of the symptoms which preceded the unhappy termination of this case.

There can be no doubt that the state of the disease, on the patient's first coming to the hospital, was much more favourable for the operation, than on his return, when every symptom was highly aggravated. But although the sac had acquired a much larger size, and the pulsation a greater force, yet the clavicle appeared to retain nearly its natural position, and the difficulties of the operation itself did not, by any means, seem to be increased in proportion to the very urgent and harrassing symptoms which demanded its performance. The happy accomplishment of the operation, and the complete cessation of all pulsation in the sac, and pain in the shoulder, for thirty hours afterwards, had induced me to indulge the most sanguine hopes for its perfect success; these, however, were speedily checked by the return of the pulsation, and the distressing pains and irritation in the shoulder and arm. These pains seemed clearly referable to the stretching of the nervous cords spread over the sac; and the early return of the pulsation in the sac, and at the wrist, can only be attributed to the free passage of blood into the arteries of the arm, by means of the anastomoses of the vessels ramifying about the scapula. From the entire cessation of this secondary pulsation, after the first hæmorrhage, I at one time thought it probable that the artery had given way on that side of the ligature nearest the sac, as the ligature remained firm in its situation; and I thought that a hæmorrhage from the aortal side would not be so long, and so easily repressed. The

contraction of the sac, and the coagulation of its contents may however be accounted for by the great faintness produced from the sudden loss of blood; the extent of the artery implicated in the aneurism, comprising all that part of the vessel between the first rib, and within half an inch of the origin of the infra-scapulary branch; and there being not more than an inch of the artery between the sac and the origin of the five large branches of the subclavian, which have been enumerated, the ligature was consequently applied under the great disadvantage of a morbid condition of the artery, so near the aneurism; and we must not overlook the circumstance of the artery being tied so near the origin of a considerable branch, that there was no internal coagulum to arrest the impulse of the blood, against the lymph, which had closed the orifice of the vessel. The appearance of the parts clearly showed that the lymph had been detached from the extremity of the artery, and that from the aperture thus produced, the several discharges of blood had arisen.

The repeated attacks of rigor, clearly indicated some internal mischief of an inflammatory nature; and the appearances after death proved that recent inflammation had existed in that part of the pleura covering the posterior parietes of the sac, and causing its adhesion to the lungs. Whether this inflammation and adhesion were produced by the pressure of the sac, or were the consequence of

irritation, brought on by the operation, is in some measure doubtful; but it seems more probable that it may be referred to the latter cause, as the pressure existed in a much greater degree before the operation, when the blood drawn showed no marks of inflammation, while it was very highly cupped and buffed at every venæsection afterwards. The preceding history seems to warrant the opinion, that the unfavourable issue of the case was more decidedly owing to the general irritation of the system, partly induced by the operation, and partly caused by the implication of the aneurism with the axillary nerves, and by its extension into the chest, than to the quantity of blood lost in the several hæmorrages.

The morbid parts are preserved in the Museum of St. Bartholomew's Hospital, by my friend Mr. Stanley, to whose assistance I am much indebted for the elucidation of their anatomical peculiarities.

Winchester, May 1st, 1821.

A

CASE

OF

BRONCHOTOMY,

SUCCESSFULLY PERFORMED

FOR THE

REMOVAL OF A PEBBLE FROM THE TRACHEA.

By WILLIAM I. HUNT, M.D.

OF DARTMOUTH.

COMMUNICATED

By HENRY EARLE, Esq.

Read Nov. 13, 1821.

CHARLES HORNE, a boy four years old, with a short fat neck, on the day of the coronation, fell with several pebbles in his mouth. One of them was drawn into the rima glottidis, where it stuck, nearly occasioning suffocation. This was prevented by a young lady, who, with great presence of mind, instantly introduced her finger into the child's mouth, and felt the stone, which she attempted to remove; but in the attempt it was forced into the trachea. In this state I found my patient, two hours after the accident. The child was so tranquil, and playing with his toys, with easy breathing, that I at first doubted whether the pebble was in the wind-pipe or not, until I made him cough, when its situation was too evident, from the convulsions and almost suffocation which it produced, attended with wheezing

and rattling in the throat. The stone being small, it returned to the bottom of the trachea, after the coughing ceased; he was then restored from apparently instant suffocation to almost tranquil and easy breathing. ℞ Muc. gummi acaciæ ℥iss. Tinct. opii gtt. xx. Syr. simplicis ʒij. M.f. mistura, capiat cochleare minimum sæpe, tussi urgente. This mixture produced so good an effect in allaying the irritation and cough, that he passed a good night; and, in the morning when I visited him, no one could have imagined that any thing was lodged in the trachea. In the course of the day, the pebble was often forced up by the cough so near the grasp of the glottis, that there was frequent danger of suffocation. A consultation of my surgical brethren was summoned to consider the propriety of an operation, who all, unâ voce, recommended it to be performed, as the stone was now coughed up so often to the sensible glottis, that the internal membrane of the wind-pipe became inflamed, and there was a copious expectoration of yellow mucus.

With the assistance of the attending surgeons I performed it in the following manner:—The child being laid on a table with his head hanging over it, and being firmly held by the assistants, I made an incision through the integuments, two inches and a half long, near the prominence of the thyroid cartilage. On dissecting down to the trachea, a considerable vessel was opened, which required the application of a ligature.

An incision, very little more than half an inch long, was made in the trachea, beginning from the first ring under the cricoid cartilage, when I most fortunately felt the pebble with the point of the knife, having fixed it with the fore finger of my left hand to prevent its being drawn out of reach by an inspiration. Mr. Budland, one of the attending surgeons, with a pair of forceps easily extracted it; it was of the shape of a kidney-bean, half an inch long, $\frac{3}{8}$ of an inch wide, and a quarter of an inch thick. As soon as the wound was dressed, the child was put to bed, and directed to take the anodyne mixture as before.

Saturday, July 21.—Passed a good night, with very little cough, the breath passing occasionally through the aperture, especially when he coughed; pulse 120. The bowels being confined, an emollient injection was thrown up, which brought off some hardened fæces. At noon, pulse 140; his breathing quick and laborious, with convulsive twitchings of his hands and arms, and breathing constantly through the wound. I bled him *ad deliquium animi*, which gave him some relief. ℞ Mannæ ℥j. Infus. sennæ ℥ss. Tinct. colchici gr. x. f. haustus tertiâ quâque horâ sumendus. Eight o'clock, P. M. the quickness of his breathing had now become stridulous, the cough and convulsive twitchings were more violent than at noon, with a pulse so rapid as scarcely to be counted, and with the additional symptom of tightness on the chest, showing that the inflamma-

tion had extended into his lungs. The aperient draught having as yet had no effect, the bleeding was repeated. I opened a vein on the back of his hand, near the wrist, immersing the hand and arm into warm water; it bled rapidly, until he again fainted, which gave instant and permanent relief for that night.—Sterno emplastrum lyttæ amplum imponatur.—R. Syrup Rhamni cathartic. ʒij. Infus. sennæ ʒij. Tinct. colchici gtt. xxxx.—f. mistura capt. coch. largum, quartis horis, donec fluxerit alvus.

Sunday, 22d. nine in the morning.—Passed a very comfortable night; several copious offensive stools passed off about one o'clock in the morning, after taking the second dose of the mixture; pulse 130; still breathing through the aperture. Noon. —The dressings getting loose were removed, the lips of the wound were found in contact, but not adhering, on account of the frothy sputa being constantly forced through it at every expiration. Seven in the evening.—He has had two hours' quiet sleep, pulse 130.—R. Tinct. digitalis.—Tinct. colchici aā gtt. xx.—Muc. gummi acaciæ.—Aquæ, aā ʒvj. Syr. rheados ʒi.—M. f. mistura, capt. quartam partem, quartis horis.

Monday, 23d.—Passed a tolerably quiet night; cough rather troublesome, the breathing more easy, no alvine discharge since yesterday morning.—Repetatur mistūra aperiens, alvo dejecta, continuetur mistura ex tinct. colchici et digitalis heri præ-

script. Noon.—The wound was again dressed, the breath still passing through it at each expiration, pulse 120: the bowels were relieved by two doses of the aperient mixture, the blister acted well, yet the breathing was rather more oppressive than in the morning; the child was restless and distressed. In the evening, pulse 130, and all his symptoms growing worse, a vein in the other hand was opened, and being immersed into warm water, bled well. I did not suffer it to bleed so long as to make the child quite faint, and therefore stopped it as soon as his lips became a little pale; this third bleeding had as good an effect as the two former ones, and was immediately succeeded by a copious purging stool. —Continuetur mistura colchici et digitalis, quartis horis.

Tuesday, 24th.—Passed a very good night, and is in every respect much better, but very weak; the air still passing through the aperture, and with violence, when he coughed. The mucus expectorated became thick and yellow, the breathing was greatly relieved, and he seemed to cough without pain; the wound looked well.—Continuetur mistura e tinct. colchici et digitalis, et mistura aperiens pro re ratâ. From this time to the 27th, there was no material alteration, but on this day the air ceased to pass through the wound: 28th, a more generous diet was allowed, he being much reduced by the repeated bleedings, &c.—Omittantur medicamenta. He progressively gained

strength, and the wound nearly filled up, still having a trifling cough, with some expectoration. On the first of August he was in a very bad temper, and crying violently; the edges of the wound again separated, but I was much pleased to find that no air passed through the wound, which soon after got into a healthy state, and is now quite cicatrized. The boy has a good appetite, and seems in every respect well.

Dartmouth, 13th August, 1821.

Observations on the preceding Case, by Henry Earle, Esq.

In the course of last Autumn, I had an opportunity of seeing the subject of the preceding paper; and considering the case as one which deserved to be recorded, I requested the author to draw it up for the Society. It appeared to me to possess considerable interest in illustrating the different degrees of sensibility between the larynx and the trachea; and in explaining, in a satisfactory manner, the great urgency of the symptoms, and the imminent danger which attends cynanche laryngea. As a valuable additional fact in support of the practice, which was so ably pursued, I felt anxious that the case should not be consigned to oblivion; more particularly as I am

not aware of any analogous case published in this country.

In searching for information on this subject in foreign publications, I find many more instances of persons who were suffered to perish for want of timely assistance, either through the timidity and neglect of their medical advisers, or the ignorance and obstinacy of their friends and relatives, than of cases successfully treated. No less than seven fatal instances are recorded by M. Louis, in the excellent paper which he published on this subject in the memoirs of the French Academy, in which he so ably points out the propriety of performing the operation of tracheotomy, and shows with what facility and safety it may be performed. Other fatal instances are recorded in the same valuable collection of memoirs; and I have lately heard of three recent cases in this country, in which death was caused by the presence of foreign bodies in the trachea; in addition to the instance of the child who swallowed a portion of sealing-wax, an account of which was read to the Society at the close of the last session. In all these instances, sufficient time was allowed for the employment of the only rational and effectual means, but probangs, emetics and expectorants were resorted to, until a fatal termination was put to the sufferings of the individuals.

On the other hand, M. Pelletan, in his Clinique

Chirurgicale, has related some successful and encouraging cases, in which he removed the foreign bodies, and rescued his patients from impending death. Rau, Heister, Verduc, and Engel mention similar cases.

From the narratives of cases in which the operation was not performed, it would appear, in many instances, that the medical men and the friends of the patients have been deceived by the state of calm which so often succeeds, after a foreign body has passed the rima glottidis; which has induced them to draw very erroneous conclusions, and to doubt the presence of any thing in the trachea. This comparative tranquillity is, however, most deceptive, and is certain, sooner or later, to be succeeded by serious and most distressing symptoms, which terminate fatally. Instances are on record, in which patients have survived months, and even years, with foreign bodies in the windpipe, which caused constant distressing cough, and purulent expectoration. In some of these cases, after great efforts, and a threatening of suffocation, the patients have succeeded in getting rid of the foreign bodies, but the diseased action which they produced has continued, and the patients have died with every symptom of pulmonary consumption. Interesting records of such cases will be found in Bartholin *, Tulpius †, Hechsteterus ‡, and Schurigius ||.

* Histor. Anatom. cent. ii. Hist. xxvii. and cent. vi. Hist. xv.

† Lib. ii. Obs. vii.

‡ Obs. Decad. vi. cap. x.

§ Chylologia Histor. Medic. cap. v. p. 85.

That the operation of tracheotomy is the only effectual and rational mode of relieving persons with foreign substances in the windpipe, is a truth which cannot be too often inculcated; and it is not less true and important that the operation should be performed as promptly as possible, before symptoms of irritation and inflammation have established themselves, which it may not be in our power to arrest, even by the removal of the exciting cause. If any additional arguments were required in support of the immediate adoption of the operation, as soon as it has been ascertained that any foreign body has passed into the windpipe, I would urge the consideration, that the patient's life is in the most imminent and constant danger, from the possibility of the substance being again forced, by any violent effort of coughing, into the rima glottidis, where it may cause almost instant death before any assistance can be afforded; of which occurrence numerous instances are recorded, and many more have no doubt taken place.

Apprehensions still exist, in the minds of some medical men, of the probable difficulty of cutting on the exact spot where the foreign substance may be. This opinion was advanced by Haller, and I have reason to believe that it is still entertained. With a view to dispel these doubts, it will perhaps be admissible to state briefly the experiments of M. Favier, related in the 14th volume of the memoirs of the French Academy, page 445. *et seq.*

M. F. introduced irregularly shaped bodies through the rima glottidis into the trachea of a dog, and afterwards divided several rings of the trachea, when the foreign bodies were forcibly propelled by a strong exspiration. These experiments were several times repeated, with the animal in different positions, and always with the same results; from which, the author draws the following conclusion: that the fear of not being able to meet with the foreign bodies, ought not, on any occasion, to deter practitioners from operating, as they will in all cases be propelled through the wound in exspiration.

These experiments are certainly very satisfactory; and no doubt, in the majority of cases, foreign bodies would be thus expelled, if the opening were made sufficiently large. The result of these trials likewise tends to diminish the apprehensions, which would naturally arise, from the introduction of any blood during an operation. Still, however, cases will occur in practice, in which this spontaneous expulsion cannot be depended upon. Pelletan relates two instances, in one of which, from the form of the body (the jaw bone of a mackrel), and in the other, from its situation (in the left ventricle of the larynx), the substances required to be extracted; which he performed, in both cases, with perfect success.

28, *George-street, Hanover-square.*

ACCOUNT

OF

A SINGULAR VARIETY OF

URINE,

WHICH TURNED BLACK SOON AFTER BEING DISCHARGED;

With some Particulars respecting its Chemical Properties.

By ALEX. MARCET, M.D. F.R.S.
LATE PHYSICIAN TO GUY'S HOSPITAL.

Read March 5, 1822.

IN the month of December 1814, Dr. Babington showed me a phial of urine which was quite black and opaque, though without any sediment or turbidness, and on the surface of which, when examined in a strong light, a dark purplish hue was discernible, giving to the liquid the appearance of a strong solution of extract of liquorice. This urine had been discharged by a healthy male child, of the age of seventeen months, whom Dr. Babington was so kind as to give me the opportunity of seeing, and from whose father, an Irish gentleman, I obtained the following particulars:

Almost immediately after the child's birth, it was observed that the urine tinged his napkins of a dark

purple hue. This circumstance, at first, gave great alarm to the parents, as they conceived it to depend upon some accidental, and perhaps very serious, ailment; but, as the child appeared to be in perfect health, though the peculiarity in question never abated for any length of time, the alarm soon subsided, and all medical treatment was laid aside, the parents imagining that, as the child grew up, the secretion would return to its natural state.

When the child had reached the age of about nine months, and when his urine could be more easily collected, it was found that, though perfectly clear on being first discharged, it assumed, in a very short time, a dark colour, somewhat like that of Port wine, which became dark by standing, till it assumed the appearance above described. This phenomenon, however, though an almost constant occurrence, admitted of occasional variation in degree, or even sometimes totally disappeared; and it was observed to prevail in the greatest degree when the child's bowels were confined, a circumstance which induced his parents frequently to administer small doses of magnesia. The child, nevertheless, always enjoyed a good state of health, having only experienced some occasional symptoms of irritation from difficult dentition. When I saw him, he was seventeen months old, and was active, robust, and lively, though as subject as ever to the peculiarity in question. It is to be regretted, that after this period we lost sight of him entirely. I have

lately made several inquiries after him, but to no purpose; and Dr. Babington has been equally unsuccessful in discovering where this family has fixed its residence.

With regard to the chemical properties of this urine, I find in my notes the following particulars:

I collected three specimens of the child's urine, (No. 1. 2. and 3.) passed at different times in the same twenty-four hours.

No. 1. was the specimen described above, procured by Dr. Babington.

No. 2. was a portion of urine passed by the child in the morning, which was quite colourless, and continued so in the evening.

No. 3. was a specimen of the urine collected in the evening during my visit.

On the following day, the specimen No. 1. now two days old, continued quite black; it had an ammoniacal smell, and was sensibly alkaline. After an interval of six weeks, it remained precisely in the same state; and after a lapse of seven years, I now find it perfectly unaltered, having preserved its colour, having deposited no sediment, and possessing the same ammoniacal pungency, without any distinct urinous smell. A small quantity of this urine is laid before the Society for their inspection.

The specimen No. 2., on standing twenty-four hours, was not sensibly discoloured, and had not become alkaline. After a few days, however, it acquired a slight tinge not unlike the colour of Madeira wine, and soon after this it became putrid, without undergoing any farther change of colour.

The specimen No. 3. was poured into a glass, an hour after being discharged, and when yet quite colourless. It had already acquired an ammoniacal smell. The next day it was found slightly coloured only; but in a few days longer it assumed a reddish colour, like that of pale claret; and, on adding to it a few drops of carbonate of ammonia, a white powdery precipitate subsided, and the supernatant fluid, in the course of about two hours, acquired the same black colour as the specimen No. 1. Carbonate of potash produced a similar change; and on supersaturating the urine with acid, the colour did not disappear. It is scarcely necessary to observe, that the addition of alkali to common urine does not produce any such change of colour.

The specimen No. 1. being the one in which the peculiarity under consideration was the most strongly marked, I made it the subject of farther examination.

Its specific gravity was 1022.2; the addition of any of the mineral acids produced an effervescence, and slight turbidness, but without altering the colour. A solution of alum lowered the tinge, and

produced a precipitate. No red globules could be perceived in the urine by the aid of the microscope, as was ascertained by Dr. Wollaston. It yielded by evaporation a black deliquescent residue. During the first part of the process, an uncommon quantity of ammonia was evolved; but, as the evaporation advanced, the urinous smell was perceived. No iron could be detected in the residue. Dilute nitric acid being poured upon it, and evaporated to dryness, no pink stain was produced; showing that the urine contained no sensible quantity of lithic acid. Alcohol seemed to have very little, if any, effect on the colouring matter; for, after being poured on the dry residue, and decanted off, it was not sensibly coloured by it, though it was rendered slightly turbid.

It appears, therefore, from the above results, that the colouring matter in question, whatever the nature of its basis may be, is developed either by the addition of an alkaline salt, or by the spontaneous evolution of alkali from the urine itself; but that, when once developed, the colour is not destroyed by the neutralization, or even the supersaturation, of the alkali.

I am not acquainted with any account of this condition of the urine occurring in the state of health; but I saw myself an instance of black urine, in the year 1802, (among the patients of the City Dispensary, to which I was then Physician,) in a young female who laboured under a very singular

and anomalous disorder, which, however distantly connected with the subject of this paper, I shall make no apology for briefly noticing on this occasion. She was subject to daily paroxysms partaking both of the febrile and hysterical character, during which her urine acquired this black colour. She was likewise subject to a remarkable intermittent affection of the integuments in particular parts of her body, the attacks occurring in irregular paroxysms, and generally following or alternating with the febrile fit. This cutaneous affection usually began with a tingling of the parts, soon succeeded by a considerable swelling or puffiness over an extent of several inches, which lasted for several hours, and ultimately followed by the appearance of a black or dark purple colour, which often continued for some days after the other appearances had subsided. The seat of this affection varied very much, the toes, legs, hips and face being in succession liable to these attacks.

For some weeks she took the Peruvian bark, without any sensible benefit. To this was afterwards added the nitrate of silver, which was continued for three weeks, at the end of which the complaint was perfectly removed. The whole disease lasted between two and three months*.

* The occurrence of black urine, in certain states of disease, has not escaped the observation of some of the older physicians, as will appear from the following expressions of Lommius, in his Observationes Medicinales, page 280:—"Nigra urina, si rubram viridemque sequitur, extremi caloris index est: si post ceruleam,

With regard to the chemical examination of the black urine, which was the chief purpose of this communication, being sensible of the unfinished state of the analysis which I had formerly made, and not having at present the command of a laboratory to enable me to render it more worthy of the Society, I requested the assistance of Dr. Prout, whose skill and experience in such investigations are well known, and from whom I was soon favoured with the following interesting particulars.

NOTE BY W. PROUT, M.D. F.R.S.

On the Chemical Properties of the Black Urine.

"THE residuum obtained from this urine by "evaporation not only does not contain any lithic "acid, as was observed by Dr. Marcet, but no "urea can be detected in it by the tests which "indicate its presence.

"Although the addition of dilute acids pro- "duced no immediate change of colour in the "urine, yet, on standing for some time, a black "precipitate slowly subsided, leaving the super- "natant fluid transparent, and but slightly coloured.

et post lividam fuit, summæ frigiditatis. In utraque mortis periculum veritur, idque eò majus, quò ea ipsa est paucior, quoque id, quod in ea subsidet, nigrius est. Cæterùm, ubi morbus ex atra bile natus præcessit, utpote lienis tumor, quartana, melancholia, et hujusmodi: tum profectò nigra urina (maximè sub istorum morborum decessu) certam spem secundæ valetudinis facit."

" The black precipitate thus obtained was found " to be nearly insoluble either in water or alcohol, " whether hot or cold. It readily dissolved in cold " concentrated sulphuric and nitric acid, forming " a deep brownish-black solution; but, on diluting " the acids with water, the black substance ap- " peared to be again precipitated unaltered. These " acids, however, by the assistance of heat, appa- " rently decomposed it. The black substance " readily dissolved in the fixed alkalies and in the " alkaline subcarbonates, forming very dark solu- " tions. The addition of water did not affect these " solutions; but acids re-precipitated the substance " apparently unchanged. When ammonia was em- " ployed as the solvent, and the excess expelled by " evaporation to dryness, a black or deep brown " residuum was obtained, which appeared to be a " compound of the black substance with ammonia, " and possessed the following properties:

" It was very soluble in water; and, on being " heated with caustic potash, it gave off the smell " of ammonia. The black compound, however, " did not appear to have any tendency to assume " the crystalline form *.

" From the solutions of this compound in water,

* In evaporating to dryness, on a piece of glass, the ammoniacal solution in which the black substance had been dissolved, the residuum split into most minute fragments, having a regular and very peculiar appearance, especially when examined with a magnifier.

" muriate of barytes and nitrate of silver produced " copious brown precipitates, as did also proto- " nitrate of mercury and nitrate of lead; but oxy- " muriate of mercury produced no immediate " precipitate, and that obtained from acetate of " zinc was of a paler brown colour."

From these experiments Dr. Prout concludes that the remarkable specimen of urine in question owes its black colour to a compound of a peculiar principle with ammonia, as I had inferred from my own trials; but he is moreover inclined to think that the black principle itself, such as obtained from the urine by the action of dilute acids, may be considered as a new body possessed of acid properties. From the small quantity of the specimen, however, which could be spared for Dr. Prout's experiments, it was impossible to obtain complete and decisive evidence on the nature of this substance; but it appears to be sufficiently characterized as a peculiar acid, and to bear a closer analogy to the lithic acid, or rather to some of the compounds which it forms when acted upon by the nitric acid, than to any other principle usually found in the urine*.

Harley Street,
March 4, 1822.

* Should this view of the subject be confirmed by farther observations, Dr. Prout would propose to distinguish this new substance, on account of its black colour, by the name of *Melanic acid.*

CASE

OF THE

EXTRACTION OF A LIVING FŒTUS,

FROM

A WOMAN KILLED BY VIOLENCE.

By J. H. GREEN, Esq.

SURGEON TO ST. THOMAS'S HOSPITAL.

Read March 19, 1822.

I AM induced to present the following narrative to the Society, as the opportunities are necessarily rare of witnessing cases similar to that which is the subject of this communication; and as it affords an illustration of the measure recommended, and in some few instances adopted, of extracting the child, when the mother has died from violence during her pregnancy.

On the 15th of April 1820, Mary Morgan, thirty years of age, and in the ninth month of her pregnancy, was run over by a heavily laden stage-coach, near the end of St. Thomas's-street, Southwark. It was said that she had been knocked down by one of the leaders, and that both the fore and hind wheel of the carriage had passed over her body. This happened twenty-five minutes before eight

o'clock in the evening, and she was immediately carried into St. Thomas's Hospital. She was there undressed, and put to bed; but during this time, expressed violent pain, was restless and agitated, shortly after fainted away, and expired five minutes before eight o'clock, which was twenty minutes after the occurrence of the accident.

It so happened, that I was in the ward upon other business at the time, and was requested by the dresser to see the unfortunate woman. It was evident that no surgical aid could be available to the mother; but it suggested itself that the child might possibly still be saved. I sent therefore, immediately, for Dr. Blundell, our esteemed teacher of midwifery; and after a short consultation, in which we agreed on the propriety of the Cæsarean section, I proceeded to perform the operation, at eight minutes past eight.

An extensive incision was made through the linea alba, into the cavity of the abdomen. Through this opening, a considerable quantity of blood gushed out, apparently the effect of previous extravasation. A second incision was then carried longitudinally through the uterus, and continued through the placenta, which was attached to its anterior surface. Dr. Blundell now introduced his hand into the uterus, and drew out the child, which exhibited, however, no sign of life. The umbilical cord was then tied and divided.

The child was removed immediately into an adjoining apartment, where there was a fire; and a tracheal pipe having been introduced, no time was lost in inflating the lungs, and carrying on artificial respiration. After the lapse of fifteen minutes thus employed, we had the satisfaction of seeing the child first gasp; and in about two minutes more the efforts of inspiration were audible at any part of the room. The pulsation of the umbilical cord had now become distinct. The inflation of the lungs was continued at intervals only, and at the end of the next five minutes three complete natural respirations might be performed in each minute. Having thus far succeeded in calling into action the vital power, through the medium of the lungs, it was thought advisable to try the effect of other stimuli, and a small quantity of brandy was given with this view. This, however, evidently produced an injurious effect, for the breathing became weaker and less regular. With some assistance, the lost ground was regained, and in another five minutes the respiration might be considered regular and natural; and at the same time the pulse at the wrist could be distinctly felt.

The next measure, which presented itself, was that of aiding more effectually the maintenance of the temperature, and the action of the heart and arteries; and for this purpose, the body of the infant was immersed in warm water. The effect was not such as was anticipated, for the pulse dimi-

nished in force and frequency, and the respiration was again obviously deranged. The child was, therefore, immediately taken out of the bath, and after it had somewhat recovered, was just dipped into cold water, for the purpose of exciting a reaction of the vascular system. This produced no marked effect. After a time, the breathing and circulation became natural, and seemed completely established: and at this time, which was fifty-two minutes after the first use of the tracheal pipe, the infant opened its eyes.

We had now considerable difficulty in disposing of our acquisition, for the establishment of an hospital does not, of course, provide for emergencies of the kind in question; and there was no female at hand, capable of exercising the maternal offices, to whom the charge could be entrusted. We could only, therefore, give directions for preserving the warmth, and administering sustenance, whilst a fit substitute for the mother was sought for. On the same night, the child was taken from the hospital to a house in the neighbourhood; but for some reason, with which I am unacquainted, it was removed the next morning, and was placed under the care of a female, who was at the time suckling an infant.

At our visit on this day, we found that the child had taken very little nutriment; it had not cried; and the breathing seemed impeded by

lected in the air-tube. Its condition did not, indeed, promise that our efforts would be attended with the success which we had indulged the hope of in the first instance. On the subsequent morning we were informed of its death, the child having lived thirty-four hours after its removal from the uterus.

On inspecting the body of the mother, it was found that the liver, on the right side of the suspensory ligament, was nearly divided by a deep rent through its substance. A considerable quantity of blood was still in the abdominal cavity, and it was plain that this, as well as the blood which flowed from the abdomen, during the operation, had been poured out from the lacerated vessels of the liver. The ninth and tenth ribs, on the same side, were broken near their angles.

The circumstances of the foregoing case, it is scarcely necessary to remark, afford an illustration and a proof that a fœtus may be recovered, if promptly extracted from the uterus, when the mother has been killed by violence; this too, notwithstanding the additional very unfavourable circumstance of death under a profuse hæmorrhagy. There seems, also, no reason to doubt that the child possessed the conditions for the continuance and permanency of the vital functions; as the actions of the brain, the heart, and the respiratory organs were established. At least, there could be reason-

ably a question only as to the competent degree of the vis vitæ, not as to its existence, nor as to the possibility of exciting those actions, by which it is at once manifested and maintained. The death of this child was, we may I think safely presume, the result of want of proper care in maintaining the animal temperature, in supplying fit and sufficient nutriment, and of the obstruction to respiration produced by the mucus collected in the trachea. It was suspected that the last circumstance might have arisen from the irritation of the tracheal pipe; but as permission was not granted to examine the body, nothing further was ascertained respecting this point.

In conclusion, I would beg leave to notice that the depressing effects of the brandy, and of the warm bath, noticed in the process of the recovery of the child, are not uninteresting, as they regard the means to be adopted for the resuscitation of persons apparently dead.

The particulars of the preceding case have been drawn up from notes taken at the time, and the statement has been revised by Dr. Blundell, to whose judicious suggestions, and prompt measures, the success of the treatment, as far as it was successful, must be principally attributed.

ACCOUNT

OF

A MAN WHO LIVED TEN YEARS,

AFTER HAVING SWALLOWED

A NUMBER OF CLASP-KNIVES;

WITH

A Description of the Appearances of the Body after Death.

By ALEX. MARCET, M.D. F.R.S. &c.

LATE PHYSICIAN TO GUY'S HOSPITAL.

Read March 19, 1822.

IN laying this extraordinary case before the Society, as affording a most striking illustration of the self-preserving powers of the stomach and intestines, I am aware that it has, in a great degree, lost the merit of novelty; for this unfortunate man died so far back as the year 1809, in Guy's hospital, where his case was noticed by many persons, and was soon afterwards alluded to in some of the Medical Journals of that period *. These anonymous and imperfect notices were not, however, calculated, any more than the simple recollection of the individuals who had witnessed the occurrence, to answer the purpose of a permanent

* See in particular the *London Medical Review*, Vol. XI, page 203.

or well authenticated record. Indeed, my late colleague Dr. Curry, under whose care the patient died in the hospital, feeling that the preservation of such a fact ought not to be trusted to mere tradition, collected, at the time, the necessary materials to draw up an account of the case, and present it to this, or some other learned society; but this having been deferred from time to time, and ultimately rendered impossible, by the death of that able physician, I thought it desirable to draw it up, before the particulars were lost or dispersed.

The principal source from which I derived my information, as to the early history of the case, is a narrative, written with great distinctness and simplicity, by the patient himself, and which, when compared with other authentic documents, establishes the facts in the most satisfactory manner *.

In the month of June 1799, John Cummings, an American sailor, about twenty-three years of age, being with his ship on the coast of France, and having gone on shore with some of his shipmates, about two miles from the town of Havre de Grace, he and his party directed their course towards a tent, which they saw in a field, with a crowd of people round it. Being told that a play was acting there, they entered, and found in the tent a

* The whole of this narrative, with all its peculiarities of expression and style, will be given in an Appendix. It was found in the patient's pocket after his decease.

mountebank, who was entertaining the audience by pretending to swallow clasp-knives. Having returned on board, and one of the party having related to the ship's company the story of the knives, Cummings, after drinking freely, boasted that he could swallow knives as well as the Frenchman. He was taken on his word and challenged to do it. Thus pressed, and though (as he candidly acknowledged in his narrative) "not particularly anxious to take the job in hand, he did not like to go against his word, and having a good supply of grog inwardly," he took his own pocket-knife, and on trying to swallow it "it slipped down his throat with great ease, and by the assistance of some drink, and the weight of the knife," it was conveyed into his stomach. The spectators, however, were not satisfied with one experiment, and asked the operator "whether he could swallow more?" his answer was, "all the knives on board the ship;" upon which, three knives were immediately produced, which were swallowed in the same way as the former; and "by this bold attempt of a drunken man," (to use his own expressions) "the company was well entertained for that night." The next morning he had a motion, which presented nothing extraordinary; and in the afternoon he had another, with which he passed one knife, which however was not the one that he had swallowed the first. The next day he passed two knives at once, one of which was the first, which he had missed the day before. The fourth never

came away, to his knowledge, and he never felt any inconvenience from it. After this great performance, he thought no more of swallowing knives for the space of six years.

In the month of March 1805, being then at Boston, in America, he was one day tempted, while drinking with a party of sailors, to boast of his former exploits, adding, that he was the same man still, and ready to repeat his performance; upon which, a small knife was produced, which he instantly swallowed. In the course of that evening he swallowed five more. The next morning crowds of visitors came to see him; and in the course of that day he was induced to swallow eight knives more, making in all fourteen.

This time, however, he paid dearly for his frolic; for he was seized the next morning with constant vomiting, and pain at his stomach, which made it necessary to carry him to Charleston hospital, where, as he expresses it, "betwixt that period and the 28th of the following month, he was safely delivered of his cargo."

The next day he sailed for France, on board a brig, with which he parted there, and embarked on board another vessel* to return to America. But on his passage, the vessel, which was probably carrying on some illicit traffic, was taken by His Majesty's

* The "Betty," of Philadelphia.

ship the Isis, of fifty guns, and sent to St. John's, Newfoundland, where she was condemned, while he himself was pressed and sent to England on board the Isis. One day, while at Spithead, where the ship lay some time, having got drunk, and, as usual, renewed the topic of his former follies, he was once more challenged to repeat the experiment, and again complied, "disdaining," as he says, "to be worse than his word." This took place on the 4th of December 1805, and in the course of that night he swallowed five knives. On the next morning the ship's company having expressed a great desire to see him repeat the performance, he complied with his usual readiness, and "by the encouragement of the people, and the assistance of good grog," he swallowed that day, as he distinctly recollects, nine clasp-knives, some of which were very large; and he was afterwards assured, by the spectators, that he had swallowed four more, which, however, he declares he knew nothing about, being, no doubt, at this period of the business, too much intoxicated to have any recollection of what was passing. This, however, is the last performance we have to record; it made a total of at least thirty-five knives, swallowed at different times, and we shall see that it was this last attempt which ultimately put an end to his existence.

On the following day, 6th of December, feeling much indisposed, he applied to the surgeon of the ship, Dr. Lara, who by a strict enquiry, satisfied him-

self of the truth of the above statement; and, as the patient himself thankfully observes, administered some medicines, and paid great attention to his case, but no relief was obtained *. At last, about three months afterwards, having taken a quantity of oil, he felt the knives (as he expressed it) "dropping down his bowels;" after which, though he does not mention their being actually discharged, he became easier, and continued so till the 4th of June following (1806), when he vomited one side of the handle of a knife, which was recognized by one of the crew to whom it had belonged. In the month of November of the same year, he passed several fragments of knives, and some more in February 1807. In June of the same year, he was discharged from his ship as incurable; immediately after which, he came to London, where he became a patient of Dr. Babington, in Guy's hospital. He was discharged after a few days, his story appearing altogether incredible, but was re-admitted by the same physician, in the month of August, his health during this period having evidently become much worse. It was probably at this time that the unfortunate sufferer wrote his narrative, which terminates at his second admission into the hospital.

* An interesting letter from Dr. Lara, was found among Dr. Curry's papers, which supplies some of the particulars respecting the patient's illness, while on board the Isis; and the close coincidence between Dr. Lara's statement and the account of the patient himself, forms a chain of evidence of the most perfect and conclusive kind. Dr. Lara's letter will be found at full length in the Appendix.

I find, however, by the hospital records, that, on the 28th of October he was discharged in an improved state; and he did not appear again at the hospital till September 1808, that is, after an interval of nearly a year since his former application. He now became a patient of Dr. Curry, under whose care he remained, gradually and miserably sinking under his sufferings, till March 1809, when he died, in a state of extreme emaciation.

Of the management of this case, while the patient was in Guy's hospital, I have little to observe. His statement being at first altogether disbelieved, he was considered as a hypochondriac, probably labouring under some chronic affection of the stomach and liver, and was treated accordingly. Subsequently, however, the consistency of his story, the intense pain he suffered at the region of his stomach, and a hardness which Dr. Babington thought he could feel in the region of the colon, induced his medical attendants to give some credit to his account of the origin of his complaint; and Dr. Babington having one day examined him, conjointly with Sir Astley Cooper, these gentlemen concluded, from a minute inquiry into all the circumstances of the case, and especially from the deep black colour of his alvine evacuations, that there really was an accumulation of ferruginous matter in his organs of digestion. And this was fully confirmed soon afterwards, by Mr. Lucas, one

of the surgeons of the hospital, who, by introducing his finger into the rectum, distinctly felt in it a portion of a knife, which appeared to lie across the intestine, but which he could not extract, on account of the intense pain which the patient expressed on his attempting to grasp it.

With a view to dissolve these bodies, or at least in hopes of succeeding in blunting their edges, dilute acids, first the nitric, and afterwards the sulphuric, combined with opium and mucilage, were prescribed, both by Dr. Babington and Dr. Curry. Various other palliatives were also occasionally administered; and that these remedies were attended with some temporary benefit, may be inferred from the long period during which the patient's life was preserved, notwithstanding the utterly hopeless nature of his situation.

On opening the body after death, various interesting appearances presented themselves *. Throughout the cavity of the abdomen, a blackish ferruginous tinge prevailed, which was also observable in the hepatic system. On examining the intestines, one of the blades, and one of the back springs, were actually found in them, both so situated that their expulsion from the body was obviously im-

* This dissection was performed by Mr. Travers, surgeon to St. Thomas's hospital, then demonstrator of Anatomy at Guy's hospital, under the inspection of Mr. Lucas, surgeon to the hospital, and in the presence of many other medical gentlemen.

possible. The latter of these (marked No. 17, in the annexed plate) about $4\frac{1}{4}$ inches long, had literally transfixed the colon opposite the left kidney, and projected into the cavity of the abdomen; while another was found stretching across the rectum, with one of its extremities actually fixed in the muscular parietes of the pelvis. It was observed that, although the knives had thus perforated the intestines, no fæces had escaped into the cavity of the abdomen, and that no active inflammation had taken place; in consequence, no doubt, of the perforation having been gradual, and of a slow and simultaneous process of ulceration having taken place from within, which had enabled the parts to adapt themselves so closely round the protruding instrument, as effectually to prevent all communication between the wounded intestine and the general cavity of the abdomen.

The stomach, viewed externally, bore evident marks of altered structure. It was not examined internally at this time, but was opened soon afterwards, in the presence of Sir Astley Cooper, and Mr. Smith, surgeon of the Bristol infirmary, who happened to be present at that moment, when a great many portions of blades, knife-springs, and handles, were found in it, and were carefully collected for the anatomical museum of Guy's hospital, in which they are now deposited. These fragments were between 30 and 40 in number, 13 or 14 of them being evidently the remains of

blades; some of which, as may be seen by the annexed plate, were remarkably corroded, and prodigiously reduced in size, while others were comparatively in a state of tolerable preservation *.

As to the stomach itself, it has also been preserved in the museum of Guy's hospital; and Sir Astley Cooper, who has again recently examined it, has favored me with the following particulars:

"The œsophagus at its lower part, and the upper orifice of the stomach, were thicker than natural. The left extremity of the stomach, where the spleen adheres to it, had its usual texture; but the right was exceedingly thickened. The rugæ, in the mucous membrane, were unusually prominent; and there were granulated projections from the edges of the rugæ. This membrane was still slightly coloured by the steel. The pylorus was natural, but the duodenum had a greater thickness than usual."

From a comparison of these particulars with the history of the case, it would appear, that so long as the stomach was not injured in its action and texture, the passage of the knives was, in most instances, attended with no, or very little inconvenience. But from the frequent repetition of these

* All these having been arranged in a glass case, were laid before the Society, for inspection. The one marked No. 7, in the Plate, being made of cast-steel, appears to have undergone the least alteration.

experiments, together with the man's habits of intemperance, the stomach at last lost the power of transmitting to the intestines those bulky and unyielding bodies. They therefore now remained in that organ, where they produced the distressing symptoms of indigestion and pain which have been described; and the circumstance of the knives not wounding the intestines till the latter period, was probably owing to a similar cause, namely, that when the stomach was able to expel them quickly, they passed through the intestines, inclosed within their handles, and therefore comparatively harmless; while at a later period, the knives were detained in the stomach till the handles, which were mostly of horn, had been dissolved, or at least too much reduced to afford any protection against the metallic part.

Being present at the dissection of which I have just given an account, I had the opportunity of noticing a chemical fact, which I shall mention, as showing the power which iron possesses of impregnating the biliary secretions. Observing that the contents of the gall-bladder partook of the black tinge of the other abdominal viscera, I collected some of the bile, for the purpose of ascertaining whether, and in what proportion, it might contain iron. About 150 grs. of this bile (which was perfectly black, and possessed the usual alkaline properties) being subjected to evaporation, and the dry mass burnt in a platina crucible, with a little

wax, the incinerated residue weighed nearly five grs., and on presenting a magnet, ferruginous particles were immediately attracted by it. This residue being treated with muriatic acid and prussiate of potash, the quantity of prussian blue formed amounted (after being well dried) to 0.5 grs. The presence of a notable quantity of iron in this bile, was therefore clearly shown by this analysis; and that this quantity was much more considerable than it is under ordinary circumstances, was ascertained by a comparative experiment upon healthy human bile (obtained from a body in which that secretion had suffered no morbid change before death), 150 grs. of which, treated in a similar manner, yielded at most 0.2 grs. of prussiate of iron. This susceptibility of the bile, of receiving a ferruginous impregnation, from the presence of iron in the stomach, appears to me the more remarkable, as I tried in vain, a few years ago, to detect iron in the urine of persons whose digesting system was under the influence of that metal *.

* See a letter to Dr. Wollaston, printed in the Philosophical Transactions for 1811.

APPENDIX, No. 1.

A Letter from Dr. Lara, *Surgeon to* H.M.S. Isis, *dated Portsea, Hants, March* 27, 1809.

[Found among the Papers of the late Dr. Curry, Physician to Guy's Hospital.]

'Sir,

'William Cummings, aged twenty-nine years, a seaman belonging to H.M.S. Isis, was reported "sick" to me, as surgeon to that ship, on the 6th of December, 1805. He complained of excessive pain in the stomach and bowels, incapacity of retaining any thing on the stomach, and severe pain in walking or standing erect. These symptoms he attributed to having swallowed, during the three preceding days, nineteen or twenty pocket-knives, and one paper knife-case; the latter he stated to have been presently returned, but all the former retained!

'Incredulous of this statement, I made every possible inquiry; and, on the evidence of those who solemnly declared they witnessed the fact, the number of knives actually taken into the stomach appeared to be fourteen! The greater part of these knives were nearly four inches long, and full one inch in their extreme breadth. It seems, he sought no remuneration for this extraordinary exploit, but a plentiful supply of what is termed "grog" at sea,

i. e. spirits and water; nor did he apprehend any attendant danger, as he had (he said), a few years previously, swallowed eighteen knives at Boston in America, of which he got rid in four days, without the least inconvenience.

I must here observe, that an inhabitant of Boston, whom I met at St. John's Newfoundland, in the summer of 1806, assured me that the fact of a man named William Cummings having swallowed several knives was well remembered by many inhabitants of Boston, and that a number of knives said to have been expelled by this man were still preserved in the Infirmary of that city.

How to act in this unparalleled case, I confess I knew not. He expressed himself certain (having frequently, he averred, swallowed one or two knives in a day, and as often discharged them, without inconvenience) that every knife had passed the stomach; and though it might not have been so (as is since proved), any attempt to force them up appeared to me to be attended with much danger; nor did I suppose it more expedient or less hazardous to attempt their expulsion downward. I trusted, therefore, to the efforts of nature, merely directing some castor-oil to be given at intervals, with or without opium, according to the degree of pain, and urgency of the vomiting, which immediately occurred on his sitting up, or swallowing

any thing solid. Glysters of thick water-gruel were also frequently injected.

In about a week from his first application, the vomiting was less frequent, and the matter ejected of a lateritious colour; the stools were black and thin. Some medical friends now suggested a trial of the sulphuric acid, in which I acquiesced. For a fortnight he took thirty or forty drops of the diluted acid four and five times a day, with tincture of opium at intervals, and a gentle laxative when costive. His diet during this time was sage, rice, tea, bread, cheese, and beef-soup, most of which were retained. The matter ejected from the stomach had gradually acquired a darker colour, as if impregnated with iron, or mixed with ink. The stools were as before described. The pulse continued unaffected; but he was evidently emaciated.

Notwithstanding these appearances, a general disbelief prevailed as to the cause to which this poor man attributed his complaints, and which disbelief was strengthened by several, who had before declared they had seen him swallow the knives, prevaricating in their evidence on being repeatedly examined. I was also blamed for keeping the man from his duty, and charged with favouring an impostor. I would not, however, discharge him. At this time my senior assistant, Mr. Thomas Watts, requested permission to try the effects of the muriated tinc-

ture of iron, conceiving, that if the system was brought under its influence, the expulsion of the knives might be proved. I consented to the trial, and Cummings took ten drops every four hours, daily increasing each dose by a drop, for a fortnight. No effect was however produced, except tormina, which symptom opium did not relieve so readily as heretofore; his appetite continued good, except for animal food. Under these circumstances, he was directed (having hitherto kept in bed) to sit up the whole of the day. For a few days he always vomited on rising; but within a week he lost that symptom, and the vomiting seldom occurred oftener than three times in the twenty-four hours, and then mostly after taking tea or other liquid. Though these fluids were returned a very few minutes after they were swallowed, the matter vomited had always the appearance of ink and water. The exhibition of any medicine was now suspended, except for the obviating of costiveness.

Towards the close of January, 1806, he was evidently more emaciated; yet he moved about, and at intervals performed the duty of a sweeper. Until the 26th of the following April, there was was but little alteration: he then complained of much pain, and incessant vomiting. Opium, the warm bath, and laxatives were employed, but without any apparent advantage; yet, at the end of May, the vomiting was much less in quantity and

in frequency; the pain was also relieved, being felt only on his attempting to stand erect; his appearance was also improved, and he was discharged to the performance of such light duties as he could execute.

On the 6th of June, he brought to me the half of a horn handle of a knife, which he declared he had thrown off his stomach that morning, without any particular effort or attending pain.

Nearly five months now elapsed without any particular occurrence. He gathered strength and flesh, ate voraciously, drank proportionably, and performed various easy duties in the ship; though, when questioned, he complained of pain when standing erect, and of vomiting at intervals.

On the 8th of November, he passed, in two alvine evacuations, the blade, and half the horn handle of a knife; he then complained of much pain in the abdomen, and was relieved by a dose of castor-oil combined with tincture of opium. The 12th of November he passed another portion of iron, with much pain, but which subsided on the expulsion being effected. The 30th of November I was removed from the Isis; at which time Cummings expressed himself to be easier than he had long been, though suffering from pain, and vomiting at intervals.

The surgeon who succeeded me (Mr. Peter Kelly) wrote to me, on the 23rd of January, 1807, to say that Cummings was much the same as when I left him, and had passed, in the early part of the month, the iron portion of the handle of a knife. In May, 1807, I received a farther communication from Mr. Kelly. He stated, that Cummings continued much as usual; that he had passed several pieces of iron, one of which had excited extreme pain, from its having laid transversely on the rectum; and that one piece, with a hook-like end, had been ejected from the stomach, with excruciating pain, and hæmorrhage to the amount of two pounds of blood. Mr. Kelly further states, that the expulsion of the different pieces of iron was generally preceded by severe pain in the abdomen.

After the last communication from Mr. Kelly, I never heard any thing further respecting Cummings, until I received your favour of the 22nd instant. If the incomplete account I have here given of this extraordinary case shall prove at all satisfactory, I shall be satisfied. I have only now to add, that of the portions of knives expelled, I have six pieces of iron, and two of horn. I trust you will have the goodness to favour me with an account of the examination of the stomach; in the expectation of which, I remain, Sir,

Your very humble servant,

B. LARA.

APPENDIX, No. 2.

NARRATIVE OF JOHN CUMMINGS,

DRAWN UP BY HIMSELF*.

A miraculous Recovery of a Seaman who swallowed a number of Knives at three different times, as you see in this little Book.

JOHN CUMMINGS, thirty-two years of age, was, in the month of June, 1799, in France. Upon a Sunday afternoon, he and a party of his shipmates went out to the country, two miles from the town of Havre de Grace, where, upon their approaching a large field, observed a great number of men and women standing, and a large tent that was placed upon the ground. Being anxious to know what they had been about, steered their course towards the place where the multitude stood; by enquiring of the first they met with, was informed it was a play. Directly they collected a livre each, and entered inside the scenes. They had full view of the performance; but by observing the play-actors swallowing knives, induced him to try the experiment. That night they were in time enough on board, where they began to enjoy the former part of the night as follows:—After drinking very hearty, one of the company opened the story concerning the above play-actors, which he repeated

* In sending this document to the press, it has been thought necessary to make a few corrections in the grammar and spelling; but otherwise the idiom and language of the original have been strictly preserved.

that it was an extraordinary affair to swallow knives. The author made answer directly, and told him that he could swallow knives as well as they could. The company present took notice of the above answer being made so quick, and for the curiosity of the circumstance, made a serious enquiry if he was man enough to perform what he had already stated. He did not like to go against his word, neither was he anxious to take the job in hand; but, by having a good supply of grog inwardly, he took his own pocket-knife, and tryed it first, which slipped down his throat with great ease; and, by the assistance of some drink and the weight of the knife, conveyed it into his stomach. But still the spectators seemed not satisfied with one, but made further enquiry, if he could swallow any more. He replied in a word, "All the knives on board the ship." By this answer, there was three more knives presented upon the table, which he swallowed in few minutes, the same way as the former. And by this bold attempt of a drunken man, the company was well entertained for that night. Next morning nature worked him to a stool, but passed nothing extraordinary; at four o'clock the same afternoon had another, when he passed one, and, what was more surprising to him, that was not the first knife he swallowed; the next day he passed two at once, and one of them being the first knife he swallowed; the fourth, never knew any thing about it, nor ever knew whether it come away or remained in his bowels. But yet he never suffered pain by them

that time, and was safely delivered without any assistance from a surgeon; and shortly afterwards took his departure from France, and never thought on swallowing any more knives for the space of six years; after which, you shall see as follows:

Boston, March 13, 1805, was in company, where he gave his report of his success in swallowing knives in France, in June 1799. Two or three of the company told him plain to his face, that it was impossible for any man to do such a thing, and that it was nothing but false report, which he took it very highly affronted; but, after considering a short time, told the company he was the same man still, and, if it was agreeable, that he would satisfy their curiosity. One small knife was presented to him, which he swallowed instantly; in the course of that night he swallowed five more, which made six in all. This uncommon report soon came to a head in the neighbourhood, as he had next morning a thousand visitors; but he gave very few of them admittance. Happened in the course of that day that he swallowed eight more, and six the night before, which made fourteen; and that was the 14th of the month; so he had swallowed a knife for every day the month was old. Next morning was the 15th; he was taken very ill, with constant vomiting and pain in his stomach. Directly he was brought to Charleston Hospital, and, betwixt that period of time and the 28th following, was safely delivered of his cargo, and the

whole of them are preserved in the infirmary of that city. Upon the 29th he shipped himself on board of a brig bound to France, where he left that brig, and shipped on board of the Betty, of Philadelphia; in their passage to America, was taken by his Majesty's ship Isis, fifty guns, and sent into St. John's in Newfoundland, where she was condemned, and some of the hands pressed. Being a few months laying there, got orders to sail for England. After twenty-five days' agreeable passage, made the land, and came-to at Spithead; being there for some days, and got on board fresh provisions of all kinds, and amongst that plenty of spirituous liquors, after drinking very hearty, he told of his success in swallowing knives in France and in America. None of his shipmates would give credit to his history, which some body present was inhuman enough to offer him a knife. Upon disdaining to be worse than his word, he proceeded immediately to perform his part of the business; that night being the 4th of December, 1805; and in the course of that night he swallowed five knives. Next morning, being the 5th day of the month, the ship's company was anxious to see the performance renewed the second time: by the encouragement of the people, and the assistance of good grog, (and his lot was ordained to be miserable hereafter in consequence of the same), he swallowed nine that day to his own knowledge; and the spectators informed him afterwards that he swallowed four more, that he knows nothing about: they were

all claps-knives, and some of them very large. Upon the 6th of December he was under the necessity of applying to a doctor, who was surgeon of the ship. The doctor, finding he was in a bad situation, made a strict inquiry of the principal men that were eye-witness to the transaction, which the captain and the rest of the officers found to be a true story. The surgeon, indeed, never neglected to pay the greatest attention, and prescribed what medicines he thought proper towards his relief; but all to no effect. At the expiration of three months, by taking a quantity of oil, he felt them dropping down to his bowels. In a few days after he was able to walk any part of the ship, and in that continuance till the 4th of June following, when he vomited one side of the handle of a knife, marked Cunningham, the same man that it belonged to, in the same ship; and, by asking him if he knew any thing about such a knife, he directly confessed that it was part of the knife Cummings swallowed of his. The surgeon keeps the said piece in his possession. Four months passed without any thing extraordinary happened. On the 4th of November he passed another piece, the same as the former, with the lining of a knife along with it; two more he passed during that month. In February following vomited another lining of a knife; in the course of that month passed four more pieces, and since nothing extraordinary came away.

June 12th, 1807, he was discharged the ship in

consequence of his complaint, and likewise being found, at the survey, unserviceable; after which, he was admitted into Guy's Hospital, under the care of Dr. Babington. Great many never believed such a circumstance. After five weeks being in the hospital, was presented out, and was in lodgings for the space of five weeks; but, finding himself getting worse, was obliged to make the second application, and was re-admitted under his physician again.

HISTORY

OF

A CASE OF

PREMATURE PUBERTY.

By JOHN FLINT SOUTH, Esq.

Read Jan. 22, 1822.

THE subject of the following memoir, John Sparrow, was born Sept. 6, 1818, at Long Melford, in Suffolk. His parents are laboring people, and at the time of his birth were about twenty-seven years of age. The father is a thin, but healthy rustic; the mother a dark little woman; has borne four children, a girl and three boys, of which this child is the youngest but one.

The following account is obtained from the mother:—She says that her labours have always been tedious; but that she had not a more difficult delivery with this child, though he was very large. At the time of his birth he was completely covered with hair, and the back of his head, particularly, with black hair, about the length usual to children of four or five months, extending towards the fore-

head, in the direction of the sagittal suture; but not at all on the temples, or sides of the head. The nurse observed that the pudenda were much larger than usual, and the first impression on their mind was, that he was ruptured; they were also particularly struck with the hoarse noise he made in crying, and his deep breathing when asleep, both which circumstances were frequently noticed by their neighbours. When he was about four months old, the hair on the pubes began to grow very quickly and black, at which time the penis increased in size, particularly the glans, so that it gradually extended beyond the prepuce, till about fifteen months, when it was entirely exposed, and the child had the appearance of having been circumcised; the pubes were then completely covered with black curling hair. Up to this time the boy had been a fat robust child, he had cut nine teeth within the twelvemonth, without any irritation of the bowels, or convulsions, so common to children at this period, and it is a curious circumstance that he had cut the four incisores, and the two cuspidati of the upper jaw, before a single tooth had made its appearance through the lower jaw; the whole set of teeth, however, were completed within two years from his birth. Before he was a twelvemonth old he could walk extremely well, but his size increased so fast, that at this time (fifteen months) his legs bowed and were unable to bear the superincumbent weight, so that he was obliged to be carried about in arms. His mother now

thought it time to wean him, as he could eat any thing that came in his way, and she accordingly did so. Soon after this, she noticed that his linen was stained two or three times in the week, when she had to dress him in the morning, and was then unconscious of the cause from whence it proceeded; but from his crying out whenever it occurred, as if hurt, and the circumstance of his being faint and pallid on the next morning, she was induced to watch him, and then ascertained the real cause, which, alarming her very much, she applied to her medical attendant, who recommended cold bathing of the whole body, three times a day, which she followed up till a few weeks before she came to town. The child's health became better, or rather he recovered flesh, for though he had got thinner, he had never lost his appetite, or had any other bodily ailment; the emissions were less frequent, rarely more than once a week; but she noticed that if he took more porter or beer than his usual allowance, he generally had an emission the same night; she also states that since the time he has been in town (six weeks) the emissions have been more frequent than for some time previously. Soon after weaning, light curling hair began to appear very fast on the temples and sides of his head, which had been before bare, and the black hair on the occiput and vertex falling off, was replaced by light hair, but not for a considerable time. She says that the fontanelles were very large, but soon closed; but that "down his forehead was so open

that you might lay your finger in it," (to use her own expression) "and also the sides of his head behind his ears," putting her fingers in the direction of the lambdoidal suture, and that these were not closed for a very long while, but she does not recollect how long. "His voice," she says, "was always gruff, and has become more so as he grew older, though not very much." He is very passionate, but his rage is soon over, and he is very anxious to be reconciled, if he thinks he has affronted his mother. When vexed he cries bitterly, the tears running down his cheeks in streams, as children usually do, but makes a very hoarse noise. He does not fail to be master when he plays with other children, and uses his fist with good effect, to obtain from them any object which may particularly strike his fancy.

Thus far his mother. The rest of the narrative has come under my own observation: I have had frequent opportunities of seeing him, both at the place where he resides, and at my own house, to which he has been several times; the result of which I shall now endeavour to lay before the Society, whose indulgence I must crave, should I not do that justice to him which his remarkable figure requires. I have, at a further part of this paper, given an exact measurement of almost the whole body.

When I first entered the room where he was, I

was much struck with the size and form of his head and neck. He has a fine high and spacious forehead; but the occiput is extremely prominent, from the enormous size of the cerebellum, which Drs. Gall and Spurzheim state is always the case when the genital organs are developed in a great degree. His countenance is that of a child of six or eight years old—puerile, but intelligent, with an archness of expression, and a pleasing smile, when he is in a good-humour. He has coarse light hair and eyebrows, with light hazel eyes, but expressive. There is no beard on the chin; but the upper lip is darkened with hair, such as is generally noticed in young persons of fifteen or sixteen, accompanied also with inspissation of the sebaceous matter about the alæ of the nose, usually observed at the same period. The neck is short and thick, but not inelegant; the anterior edge of the trapezius muscle forming a gentle curve from its origin to its insertion in the scapula and clavicle. The sterno-mastoid muscles are large, but not very prominent.

When his clothes are stripped off, the trunk presents the appearance of that of an adult, except that he is not so large across the shoulders as he is round the pelvis, the clavicles being, comparatively with the rest of his body, short. He has a large and ample chest, on which the pectorales are prominent. The nipples are small and dark. The abdomen is large and prominent; but neither is

this or the chest covered with much hair. The penis, scrotum, and testicles are as large as those of an adult: the prepuce being always drawn back, or perhaps, it may be said, not existing at all; the glans penis is constantly uncovered. The pubes and scrotum are covered with thick dark curling hair. The thighs are larger and muscular, but out of proportion, not being longer than the tibia and fibula, which bones are bowed forward; but, in addition to this, they also bow outwards, more particularly the left, their lower epiphyses having given way under the great weight they have to support; the feet are large and broad, but the arches of the tarsal bones are much impaired from the same cause. The arms are muscular, and the origins and insertions of the muscles admirably marked. The hands are large, and covered in the palm with rough hard skin.

But it is the posterior view of the trunk which presents, next to the parts of generation, the most remarkable appearance. The lumbar mass of muscles is enormous, and the trapezius, with the latissimus dorsi, are not a whit behind them; the muscles of the scapulæ are also very large and prominent. The spine is very erect; and from the nape of the neck to the pelvis, he is completely covered with hair, like a strong muscular man: in short, the back gives the idea of very great strength, which he possesses, as he can lift a half-hundred weight with one hand, with great ease, and will

drag an adult about on his rocking-horse, without much exertion.

His voice is very deep and hoarse, and he laughs loud and heartily; but the larynx is not so much developed as might be expected, the thyroid cartilage being by no means prominent; which, however, may perhaps be less noticed from the great size of his neck, which is very fat.

As to his disposition, from what I have observed, I have no doubt that his mother's statement is correct. When a stranger visits him, he is at first shy; but, by the kind manner which children expect and so well know how to appreciate, any thing may be done with him, which I have myself witnessed when I measured him, and at the time when Mr. Silvester, one of our students, was so kind as to make a sketch of him for me; which last took up full two hours at his first sitting, during which time he allowed himself to be put in any position we thought proper without the least opposition.

He is remarkably inquisitive, asking the name of every thing which is new to him, which he does not forget, as children generally do. But still his faculties are only those of a child, though his body is so completely evolved: he still acts from the impulse of the moment, without reflection on the consequence of his wishes. He is satisfied with the

common amusements of childhood, and can be amused for hours with a humming-top, or scribbling on a piece of paper; whilst, on the other hand, if he be opposed in the most trivial thing, he will throw himself into a violent passion, chastise the offender, if it be in his power, or, if not, vent his indignation in a flood of tears.

He does not seem at all aware of his situation; and, from what I can ascertain from his mother, has not the least inclination to play any tricks with himself. But it is remarkable, that whenever he has an emission in the night (now about once a week), and he is always waked by it, he calls out, 'Leave me alone; do not pull me about;' and will not go to sleep till his father goes to sit by him, when he immediately drops off.

He weighs 64 pounds avoirdupois.

ADMEASUREMENTS.

	Feet.	In.
Height	3	7
From the nasal process of the frontal bone across the vertex to the tubercle of the os occipitis	1	2⅝
The circumference of the head above the orbits	1	9½
From the transverse suture to the symphysis of the lower jaw	0	4½
From the angle of the same bone to its symphysis	0	3½
——— tubercle of the os occipitis to the tip of the os coccygis	1	11½

	Feet.	In.
From the top of the trochanter major to the head of the tibia	0	8½
From the head of the tibia to the outer malleolus	0	8
——— inner malleolus to the sole of the foot	0	2
——— tuberosity of the os calcis to the tip of the great toe	0	7
Length of the clavicle	0	4⅝
From the acromion to the olecranon	0	7⅝
——— olecranon to the tip of the styloid process of the ulna	0	6¼
From the styloid process to the tip of the middle finger	0	6
Length of the inner edge of the sterno-mastoid muscle	0	5¾
Circumference of the neck, opposite the thyroid cartilage	1	0½
From the mastoid process to the point of the acromion	0	6¾
From the acromion to the same, before	0	11
———, behind	1	0½
Round the thorax opposite the nipples	2	1
——— scrobiculus cordis	2	0½
——— loins opposite the umbilicus	2	3
From the anterior superior spinous process of one ilium to the other, before	1	2½
———, behind	1	3
From the anterior superior spinous process of the ilium to the symphysis pubis	0	6
Round the deltoid muscle	0	9
——— biceps	0	7½
——— upper part of the fore arm	0	7¾
——— wrist	0	6
——— upper part of the thigh	1	2⅛
——— gastrocnemius at the calf	0	9

	Feet.	In.
Length of the penis, when pendent from the symphysis pubis	0	3
Circumference of ditto	0	$3\frac{1}{8}$
Penis, scrotum, &c.	0	$7\frac{5}{8}$
Length of the penis, when erect	0	6
Circumference	0	4

Thus, then, I have finished the task which I had taken in hand, in which I do not pretend to any thing more than a plain matter-of-fact statement. The case is rare and curious; one only of the male sex having previously appeared before the Society, and published in the first volume of their Transactions. I am not satisfied, as Mr. White seems to have been with his case, "that the changes which took place in this boy had their origin in utero." And I am not quite decided as to the loss of flesh which this boy suffered, between the period of weaning and the emissions of semen; whether it was the effect of the child having its customary and natural food withheld, which we know frequently produces the most fatal consequences to children, or whether it was the precursor of those important changes which the body was immediately to undergo.

January 8, 1822.

ON THE

PRODUCTS

OF

ACUTE INFLAMMATION.

By THOMAS DOWLER, Esq.

COMMUNICATED BY

Sir ASTLEY COOPER, Bart.

Read Nov. 13, 1821.

IN John Hunter's excellent work on inflammation, we find some opinions respecting the nature of the substances produced by this process, and the conclusions which that indefatigable author formed, as far as they extended, were, I believe, nearly correct, although the products actually deposited were not made the subject of direct experiment.

Considerable ambiguity has existed respecting the nature of these animal substances, from the various appellations which have, from time to time, been given to them. Thus, that which is commonly known by the name of "coagulable lymph," has been sometimes mistaken for coagulated albumen. The term "coagulable lymph," as applied to what we now understand by fibrin, is evidently a very

improper one; for the word lymph, taken singly, has, I believe, been used to express the albuminous part of the blood, and this is very well known to be coagulable; coagulated albumen, therefore, and coagulable lymph might be readily mistaken for each other, although these substances differ considerably in some of their properties. Lymph is also the name of the fluid which is contained in the absorbent or lymphatic vessels, and this is likewise said to be coagulable, although not spontaneously, as is the case with fibrin.

I shall endeavour to prove that it is this latter substance, or fibrin, which is deposited, in conjunction with serum, during the progress of the adhesive inflammation. Chemistry does not yet afford any *certain* means of distinguishing fibrin from albumen, in its solid state; it consequently becomes necessary to have recourse to its physical properties. From one of these properties the name of fibrin is derived, viz. its always exhibiting a fibrous or filamentous texture; a property which albumen cannot be made to assume, although it be rendered solid by heat, acids, alcohol, or the galvanic fluid, &c. Albumen, again, when coagulated into a mass, is very readily broken down between the fingers into a pulpy form; fibrin, on the contrary, will resist considerable pressure, being firm and elastic. But the principal distinction between these animal products, consists in the fibrin becoming solid spontaneously, when taken from the living vessels, whereas albumen has not this property.

When adhesive inflammation is taking place, the fibrin of the blood, together with serum, seem to be secreted from the vessels: they are both thrown out in the fluid state; but the former has the property of becoming solid soon after it is removed from the influence of those vessels; and in so doing it encloses between its fibres the serum, with which it had been secreted. This change begins to take place very soon after its escape from the circulating system, and does not appear to cease, till a considerable time after it has been removed from the body.

If a blister be applied to the surface of the skin, so as to produce much inflammation, it will occasion a greater or less quantity of adhesive matter to be secreted under it; this will be generally found at the most depending part, clearly proving that it had been thrown out in the fluid form, and had arrived at this situation by its gravitation. Here it gradually assumes the solid state, and during this change it retains between its fibres, (which appear to be flattened and extended) the serum, which is poured out at the same time; and it not unfrequently happens that the fibrin is so abundant, that the whole of the serum is enclosed in it, and that they form together, one solid and opaque mass. If, however, the quantity of fibrin is but small, the solid mass so produced, will be semitransparent, and have a gelatinous appearance; hence it is usually denominated a "gelly blister."

If the solid compound just alluded to be re-

moved from the body, and pressed *strongly* in a fine linen cloth, the serum will be forced out, while the fibrous part remains; this fibrin I have chemically examined and compared with that of the blood, and could not find the slightest difference between them. The serum, so separated, will often contain a small portion of fibrin, which after a time will contract, and again render it of a gelatinous consistence. A substance of a gelatinous appearance is occasionally found about the external layers of the fibrin, in the aneurismal sac, which is probably formed in the same manner.

The solid substance, thrown out in consequence of the application of a blister, bears a great resemblance to the buffy coat of inflamed blood, the nature of which seems not to have been well understood. M. Deyeux supposed it to be fibrin, altered in its nature, so as to approach to that of gelatin. Fourcroy says, "I do not consider it as demonstrated, that the buffy coat proceeds from fibrin; it appears to me more natural to consider it as coagulated albumen, which carries with it a portion of fibrin, on account of its concressible power."

Again, Dr. Thomson in his work on inflammation, observes, "that the buffy coat was boiled in water, but no solution of it took place; an event which must have happened, had it consisted of gelatine; it exhibited no properties, different from those of the ordinary lymph of the blood."

From the results of some experiments on the buffy coat which were made with a view to ascertain its composition, I am induced to differ in some measure from the opinions of the authors just quoted. The following was one method which I had recourse to, in which I endeavoured to avoid the use of chemical re-agents, as they have been supposed, in such cases, to afford only equivocal results:—Eight ounces of blood were taken from a man who was labouring under rheumatism, and received into two four-ounce vessels; the one being allowed to rest, in order that a buffy-coat might form; while the blood in the other was kept in motion, to prevent its formation. After the lapse of twenty-four hours, the blood that had been kept agitated was washed, in order to separate the fibrin, which, when dried, weighed 12 grains*. The four ounces contained in the other vessel, being washed, and the fibrin collected and dried by the same means (having, however, the buff previously removed), afforded only six grains; consequently, it might reasonably be supposed that the six grains wanting were existing, in some form or other, in the buffy crust. This was found to be the case; for, when it was submitted to pressure, a large quantity of fluid escaped; the mass became evidently of a fibrous structure; and, when dried, it weighed precisely six grains, making, together with the six which were obtained from the crassamentum

* The proportion of fibrin varies very considerably in the blood of different individuals, and in the same person at different times.

of this blood, a number equivalent to that produced by the blood in the other vessel. The fluid thus pressed from the buff became solid by the application of heat, and consisted of common serum.

From this, as well as from other experiments, it appears that the inflammatory crust or coat of blood is not altered fibrin, as M. Deyeux thought it to be; neither is it coagulated albumen, as supposed by Fourcroy; nor does it consist entirely of coagulable lymph, as Dr. Thomson seemed inclined to consider it; but it is composed of a tissue of fibrin, containing between its fibres a very large proportion of fluid serum.

A red globule of blood is known to be formed of a smaller globule enveloped in a vesicle of colouring matter, which can be readily removed by water. The particle which thus remains is precisely of the same size as those of pus, and possesses properties so analogous, that I believe some physiologists have considered them as identical. If this be really the fact, the phenomena of common acute inflammation, when it attacks a part which is not glandular, may be very readily explained.

The modern improvements of the microscope, together with the invention of the micrometer, have afforded us an opportunity of measuring minute objects with accuracy; and Sir Everard Home has found that the particles of albumen, fibrin, pus,

and the red globules, differ considerably with regard to their relative magnitudes*. Now, as these substances, when mixed with certain salts and a considerable proportion of water, form the blood, and as they are secreted in the order enumerated when inflammation is taking place, it may be conjectured that the deposition of each chiefly depends upon the diameter of the blood-vessel from which it is poured out. When inflammation takes place, accompanied with effusion, the substance that first escapes is serum; if the inflammatory action gradually increase, and, at the same time, the diameters of the vessels be enlarged, this is followed by fibrin, the nucleus of the red globule, or pus, and, lastly, by blood in an unaltered state, as is seen in the formation of a common abscess. We also find, that when this action is commencing, or exists only in a slight degree, serum alone is effused, as is well seen in hydrocele; but when this fluid is drawn off, and an irritating one injected, the inflammation increases, the vessels become still more enlarged, and serum, together with fibrin, is effused. When a blister is applied to the surface of the body, it irritates and causes inflammation; which, if slight, is accompanied only by a discharge of serum; if it be severe, adhesive matter will be thrown out; and if the inflammation be still more violent, a puriform effusion will take place.

These observations appear to be confirmed, in

* Philosophical Transactions for 1818.

some measure, by the following circumstances. When inflammation attacks a part, the vessels of which are naturally of large size, it soon goes on to the formation of matter, if not checked by proper remedies; but, on the other hand, if the vessels be very small in the healthy state, they seldom have the diameters so much increased as to allow of the passage of the particles of pus; consequently, when inflammation takes place in such vessels, it usually terminates in the effusion of serum, or of adhesive matter. When serous membranes become inflamed, the common products are secreted, which would seem to indicate that these parts do not possess a glandular structure; the blood-vessels, however, being naturally small, the inflammation seldom extends beyond that which terminates in adhesion.

I have used the term serum for one of the products of imflammation for the sake of simplicity; but the constituents of it vary considerably in their proportions to each other; for when it is produced by greatly increased action, it will contain a greater quantity of albumen than when that action is not so violent. This is exemplified in cases of serous effusions, in which we find that the proportional quantity of albumen differs according to the degree of inflammation present.

Note on the preceding Paper,

BY JOHN BOSTOCK, M.D. F.R.S. &c. &c.
ONE OF THE VICE-PRESIDENTS OF THE SOCIETY.

"As an appendage to the above valuable paper, I beg to state, that I performed some experiments, in the years 1807 and 1808, on the chemical composition of the buffy coat of inflamed blood. The method which I employed was, to remove the layer from the surface of the coagulum, and, after placing it on an inclined plane, to subject it to a stream of water, by which all the soluble matters were carried off, without altering the texture of the insoluble part. The result was, that a quantity of albumen was removed by the water, while a substance was left which exhibited a fibrous texture, and which I concluded to be principally composed of fibrin. At the same time, its appearance, as well as the effect of chemical re-agents upon it, led me to doubt whether it was precisely similar to the fibrin of the blood; and I was disposed to think that a certain portion of coagulated albumen was united with it, and formed a part of its substance.

"The difficulty which I experienced in satisfying myself respecting this point, prevented me from laying my experiments before the Society, along with the others which I performed about this time; and I have never since had an opportunity of resuming them."

Upper Bedford Place, April 17, 1822.

A CASE
OF
INGUINAL ANEURISM
SUCCESSFULLY TREATED,
BY TYING THE EXTERNAL ILIAC ARTERY.

By EDWARD SALMON, Esq.
SURGEON TO THE FIRST BATTALION OF THE THIRD REGIMENT OF GUARDS.

COMMUNICATED BY
Mr. EARLE.

Read March 20, 1821.

THOMAS BROAD, aged 29 years, a private in the third regiment of Guards, was brought to the hospital in September, 1820, with an aneurism in the groin, extending to Poupart's ligament. From his own account, it had been ten months in acquiring this magnitude.

I performed the operation of tying the external iliac artery on the 12th of September, making an incision through the integuments, three inches and a half in length, beginning above the spine of the ilium, and continuing it to the base of the tumor. The aponeurosis of the external oblique muscle being brought into view, was divided to the same extent, and in the direction of the external incision. The internal oblique, and the transverse

muscles, were divided with a probe-pointed bistoury, to the extent of an inch and a half. With great care I pushed aside the bag of the peritoneum, by which means, I was enabled to introduce my finger down so as to feel the external iliac artery beating under it. I endeavoured to separate the vessel, but could not succeed, either with my finger, or the point of the aneurismal needle. With a scalpel, therefore, I made an incision on each side of it, and then passed a strong ligature underneath it, taking care to include nothing but the vessel, and tied it firmly. The pulsation in the tumour instantly ceased, the edges of the wound were brought together, with a suture in the middle, and straps of adhesive plaster.

After the operation, the patient complained of some little pain in the abdomen, which subsided in the evening. An opiate was then given, and the diet was restricted to bread and tea.

Sept. 13th.—He had a quiet night, slept five hours; pulse 112; no difference of heat in the extremities. In the evening complained of great flatulence; there was also tension of the abdomen, for which he was ordered an opening medicine, not having had any stool during the day.

14th.—Had a restless night with griping, and no stool. The opening medicine was repeated, from

which he had two stools, and was greatly relieved; pulse 96.

15th.—Slept five hours; had four stools; no pain in the abdomen; pulse 88. This day the dressings were removed, the incision had united.

16th.—He passed a good night; skin cool; no pain; pulse 80.

19th.—Complains of uneasiness in the upper part of the incision, which has become disunited, and discharges sanies mixed with pus. Every other symptom most favourable.

20th.—The discharge of pus considerable, and of bad consistence. There being much debility and a weak pulse, he was ordered decoction of cinchona, with diluted sulphuric acid, three times a day. His diet was also increased.

From this period his health improved; the pus became of better quality, and less in quantity. The tumor was much smaller, and undergoing rapid absorption.

The ligature came away three weeks after the operation, when the wound had nearly healed. The man was kept in the hospital two months, when he was discharged in perfect health, with the free use of the limb, and hardly any remains of the tumor.

Although many successful cases of tying the external iliac artery in femoral aneurism have already been published, yet every additional one, attended with such decided success as the present, and occasioning so little disturbance to the system, may have the good effect of giving greater confidence to practitioners.

January 22nd, 1821,
Regent Street.

OBSERVATIONS

ON THE USE OF

THE CUBEBS, OR JAVA PEPPER,

AS A REMEDY FOR GONORRHEA.

BY

S. D. BROUGHTON, Esq.

MEMBER OF THE ROYAL COLLEGE OF SURGEONS;
SURGEON TO THE ST. GEORGE'S AND ST. JAMES'S DISPENSARY,
AND TO THE SECOND REGIMENT OF LIFE GUARDS.

Read December 11, 1821.

THE efficacy of the Cubebs, or Java Pepper, as a remedy for gonorrhea, being still of a doubtful nature in the minds of many practitioners, while, on the other hand, some place very considerable reliance upon its powers, it appears desirable that all the experience which can be collected from our public institutions, and other sources, should be brought forward, and submitted to the notice of the profession at large.

The history of this plant, its nature and tendency, and the best modes of preparing and exhibiting it, being already before the public, I shall confine myself altogether to a summary account of the results of my exhibition of Cubebs in *fifty* cases of gonorrhea; the largest proportion of which were

those of soldiers, and the remainder dispensary and private patients.

The preparations employed were the powder, and the wine or tincture; the former in doses of from half a drachm to two, and the latter from one drachm to half an ounce, twice or thrice a day.

The following statement will exhibit a concise and general view of the results:

Patients cured in from two to seven days	10
- - - - - - - - eight to fourteen	17
- - - - - - - - fifteen to twenty-one	18
- - - - - - - - twenty-two to thirty	1
- - - - - - in fifty-five days	1
Patients in whom no sensible effects were produced	3
Total	50

In *five* of the above cases, though the relief obtained was immediate and decidedly marked, the final cure was completed under the use of copivy in *four* of them, and an astringent injection in the other.

In one case the complaint, having been arrested, returned again, and was eventually removed by copivy.

Two cases, solely removed by the cubebs, were attended with swelling of the testicles, and one was accompanied by severe chordees, for which the

usual remedies were used, in conjunction with cubebs. A small proportion of these cases only was of the severer kind, and two such were among the failures.

The greater part were recent cases; but one of six months' existence yielded to cubebs in as many days, while the case of fifty-five days' cure had existed no more than a fortnight.

Among *fifty* cases treated with cubebs, there were, therefore, *three* total failures, *five* relieved, and *one* suffered a relapse; leaving *forty-one* cases cured under the use of the pepper, in less time than a month, with *one* exception; the largest proportion in less than three weeks, and several in a few days, among which latter some were well in eight-and-forty or thirty-six hours; and, the failures excepted, the relief in all cases, where the symptoms were urgent, was very sudden; and only two instances of swelling of the testicles occurred, and one of chordees continuing after the exhibition of the pepper, although in other respects the clap was relieved directly.

The account may therefore stand thus:

Cured	41
Relieved	5
Cured and relapsed	1
Failed	3
Total	50

It may be said that other plans of treatment are capable of affording similar results, especially that of injecting. But there are some points of view in which I cannot avoid looking at the cubebs pepper more favourably than any other remedy. It seems to possess a power of allaying irritation beyond that of alkalies, or the nitre and gum powders, and also of diminishing the discharge. Over balsam of copivy it seems to hold an advantage, in being admissible in the earliest and worst stages of the severest gonorrhea, without being productive of inconvenience to the patient; while I have not found its continuance attended with that injury to the functions of the stomach which so frequently arises from full and continued doses of copivy.

It appears to be superior to injections in not possessing any one of their injurious effects; and a remedy which is equally effective, and introduced into the general system, is, I think, more valuable than one applied topically to such a membrane as that of the urethra.

As to the time which is usually consumed in removing a clap with cubebs, I think it might challenge most remedies in this respect, and is not more fickle in its operation. And, at the same time, we must take into consideration its negative qualities, which, rendering it a perfectly safe remedy, would naturally induce an inclination to sacrifice a little time, were it necessary, for the

sake of avoiding the chances of a ruder, though a quicker plan of cure.

Upon the whole, considering the effects in general of medicines on the human constitution, the resistance which the latter often opposes to the former, and the variable state of medicines, there are grounds for presuming that the cubebs pepper, though certainly not a specific, is as worthy of being relied upon, in removing gonorrhea, as any other remedy, while its exhibition is unattended with any dangerous or disagreeable consequences; and it is frequently a quicker remedy in its action than those usually employed.

As to the general use of this pepper, I agree with others in thinking that when it does not seem to act in three or four days, it should be superseded by some other remedy; and as soon as (having relieved the urgent symptoms) it appears to cease exerting its influence on the constitution, the balsam of copivy may be employed advantageously.

Although no general rule can be laid down, yet it appears to me that those cases in which most benefit may be expected to arise from the use of cubebs, are the most recent, and perhaps not the severest cases; in short, those cases which are most usually met with in practice.

As a farther advantage of this medicine, it may

be added, that the habits of life and mode of diet need not to be infringed upon, any farther than such as common sense would dictate to every individual labouring under a local inflammatory affection, which, in every instance, must be aggravated by exercise and intemperance; and recovery assisted by degrees of rest and abstinence, proportionate to the degree of the existing inflammation; the neglect of which must oppose the beneficial influence of any remedy whatsoever.

Great Marlborough Street,
October, 1821.

ON

PARTIAL PARALYSIS.

By JOHN SHAW, Esq.

LECTURER ON ANATOMY, GREAT WINDMILL STREET.

Read April 30, 1822.

IT is, probably, well known to many members of this Society, that, during the last two years, very important discoveries have been made on the functions of certain nerves. A general view of these discoveries will be found in a paper in the last volume of the Transactions of the Royal Society*.

In that communication Mr. Charles Bell has shewn, by researches into comparative anatomy, and by experiments, this most important fact, that the "*nerves of all creatures may be divided into two parts or systems; the one simple and uniform, the other irregular and complex, in proportion to the complexity of the organization.*" The first he has called *symmetrical* or *original*; the other, the *superadded* or *irregular* nerves. He has also shewn,

* On the Nerves, giving an account of some experiments on their structure and functions, which lead to a new arrangement of the system, by Charles Bell, Esq.

that "no organ which possesses only one property or endowment, has more than one nerve, however exquisite the sense or action may be; but if two nerves coming from different sources are directed to one part, this is the sign of a double function performed by it; and if a part or organ have many distinct nerves, we may be certain, that instead of having a mere accumulation of nervous power, it possesses distinct powers, or enters into different combinations, in proportion to the number of its nerves." It is, however, to be recollected, that the nerve called sympathetic, is not included in this arrangement.

As I assisted Mr. Bell in his researches into the comparative anatomy of the nervous system, and in the performance of the experiments by which his opinions have been substantiated, I was naturally induced to take much interest in the investigation. The results of experiments upon the two systems of nerves being very different, it appeared to me probable that, by an examination into the phenomena consequent upon paralysis, it would be found that the symptoms accorded with the system of nerves affected. To this enquiry I have, of late, particularly directed my attention.

The facts which I have already observed, though not yet so numerous as to permit us to come to any absolute conclusions, are still sufficient to shew, that *when one system of nerves is affected, the symp-*

toms are different from those following a disease of the other, and that the two systems are seldom affected at the same time.

To establish these facts, I have published two papers in the Quarterly Journal of Science. In the first communication, in January 1822, I have entered particularly into the description of the comparative anatomy of the nerves of the face, by which the conclusions previously drawn by Mr. Bell are further proved, viz. that if there be muscles on the face of an animal, corresponding in action with the respiratory muscles of the chest, they will be supplied with nerves not only from the original or symmetrical system, through the fifth or trigeminus, but also from the superadded system, through the nerve commonly called portio dura of the seventh*.

* To this nerve we have given the name of respiratory of the face. This change in the nomenclature has been made for several reasons; first, in consequence of its being proved by comparative anatomy, that the nerve, at its origin, is not connected with the portio mollis, or auditory nerve; secondly, that if, as has been already stated, there be muscles on the face, which accord in action with the respiratory muscles of the chest, they will receive branches from this nerve; and, lastly, if these branches be cut, the muscles will immediately be deprived of the power of co-operating in the act of respiration; the same muscles will, however, retain certain powers, which, by various experiments, are proved to be derived from the fifth pair.

In giving this description of the nerves it is scarcely necessary to state, that the face is, like all other parts of the body, supplied with twigs from the sympathetic.

In the same paper the result of experiments upon both sets of nerves is also given.

In my second communication I have shewn, that in the common cases of hemiplegia, or palsy after apoplexy, the muscles are paralysed only in those voluntary actions, the perfection of which depends on the nerves of the original or symmetrical class; while in the case of partial paralysis of the face, in consequence of an affection of a nerve of the superadded system, the muscles are deprived only of the power over those actions which are to a certain degree involuntary, or to perform which, it is necessary there should be a combination with the organs of respiration. It is also in the same communication proved, that if, in a case of hemiplegia, those actions of the muscles (and those of the face particularly) which are regulated by nerves of the superadded system, be excited, the symptoms produced by the paralysis of the original system of nerves will disappear for the time; it is moreover shewn, that if, in a case of paralysis of a nerve of the superadded system, the actions controlled by the nerves of the original system be excited, analogous results will be obtained.

As these observations were confined to questions of anatomy and physiology, I did not presume to offer them to the consideration of the members of the Medico-Chirurgical Society; but a fact, much

more important to the physician or surgeon, remains to be shewn, viz. that the two kinds of paralysis seldom or never depend on the same cause, and that, consequently, the plan of treatment must be widely different in each case.

Cases of partial paralysis, similar to those which I shall now lay before the Society, are probably familiar to every member; but the fact, that such cases have been only cursorily mentioned by writers on palsy, without any attempt to account for the phenomena presented in them, will perhaps be a sufficient excuse to a learned body, for my entering into details, which of themselves may be uninteresting.

When we recollect the numerous nerves which supply the head and neck, and many of which differ in function from each other, we cannot be surprised that some of them should be affected, while the functions of the others continue unimpaired. Indeed the most common cases of partial paralysis which have been recorded by writers on palsy, are of certain actions of the muscles of the neck and throat. But, at present, I shall confine my observations principally to those cases, where the respiratory functions, and the powers of expression in the muscles of the face, were affected.

The first series of cases will prove that the most

common instance of partial paralysis of the face is seldom caused by an affection of the brain, as has been hitherto supposed, but that it generally depends on some injury or disease of the superadded nerve, commonly called portio dura, of the seventh pair, and to which we have given the name of respiratory nerve of the face.

FIRST SERIES OF CASES,

To shew the Symptoms and Effects of Partial Paralysis of the Face, in consequence of Inflammation of the Portio Dura.

J. Richardson, October, 1820.—On first looking at this man, there does not appear to be any thing unusual in the state of his face; but the moment he speaks or smiles, the mouth is drawn to the left side. When he laughs, the distortion is increased; and when he sneezes, the difference between the two sides is quite extraordinary.

On holding ammonia to his nose, it was observed that he could not inspire with the right nostril; and, on examining the state of the muscles, when the act of sneezing was excited by the ammonia snuffed up by the left nostril, it was found, that not only those of the right side of the nose and mouth, but also of the eye-lids, were passive, while all the

muscles of the left side were in full action. When he blew, or attempted to whistle, the air escaped by the right angle of the mouth, the right buccinator not at all corresponding in action with the muscle of the left side, nor with that of the muscles of the chest and neck, by which the air was expelled.

On exciting those actions which, by experiments on animals, we had proved to depend on the fifth pair of nerves, they were all found perfect; *i. e.* the patient could bring the orbicularis oris into such action as to hold a pencil with it; he could throw a piece of bread from the right to the left side of his mouth by the action of the buccinator*, and he could close his jaws with equal force on both sides. The sensibility of the paralysed cheek was equal to that of the other side.

I need not here particularly describe the phenomena which are observable on the face of a person who is paralytic, after an attack of apoplexy; but merely state, what I think will be found cor-

* We cannot divide the actions of the muscles of the face simply into voluntary and involuntary. Whistling is a voluntary act, but to perform it, all the muscles of the face connected with respiration must be perfect in their actions; so it is also in snuffing. The action of the buccinator in mastication, is quite independent of the respiratory organs, and this, we may presume, is the reason, why this function of the muscle is not deranged when the portio dura is cut.

rect in the greater number of instances;* that those actions which I have just enumerated as perfect, in this case, and which are produced through the influence of the fifth pair, will be found deficient; while those, which are influenced by the respiratory nerve, will be perfect. I may further state, that if, in such a case, the actions regulated by the latter nerve be excited, both cheeks will not only be drawn up to an equal degree, but the eye-lids and eye-brows will act so similarly on both sides, that the distortion and heavy expression, which are so remarkable in a paralytic patient, will disappear for the time.

The history of the first part of the case just related, according to the account given by the patient's friends, was the following.—He was seized with a severe pain under the ear, and in a short time became so delirious, and his face so distorted, that the people in whose house he lodged, supposing him to be mad from brain fever, carried him to the parish work-house. There he lay until his friends discovered him and brought him into the hospital. It was then found, that the phrensy which had led the people of the lodging-house to suppose that he was mad, was only a high state of delirium, in consequence of a severe attack of cynanche parotidea; indeed, the inflammation had run so high, that an abscess formed and burst under the ear.

* A particular account of the phenomena consequent upon hemiplegia, is contained in my paper in the Quarterly Journal of Science, for April, 1822.

When the swelling subsided, the degree of paralysis was more easily noted.

The delirium and the paralysis of the face naturally led the gentlemen, who first saw this patient, to suppose that the symptoms were caused by an affection of the brain. Luckily, the treatment generally adopted in cases of phrenitis, was best adapted for the particular affection which had caused both the delirium and the paralysis.

The following instance will shew to what a degree of needless severity a patient with such an affection may be subjected. During the course of last winter, a surgeon, in town, was much distressed by receiving intelligence that one of his relations in the country was attacked with symptoms of paralysis of the face; but in the course of a short time he was not less surprised than pleased, to hear that his friend had been suddenly relieved of all the symptoms, by the bursting of an abscess in his ear. The progress of this case puzzled my friend not a little, until he read the account of the enquiries in which we had been engaged in Windmill Street. He then related the case to me as a good example of the importance of the discoveries to the medical practitioner; for his relation, in consequence of the paralytic attack having been supposed to proceed from an affection of the brain, had not only gone through all the severe discipline of bleeding, purging, and starving, but had also his head shaved

and blistered. Had this been a solitary instance, it might have been supposed that the means employed had effected the cure; but the next case will prove that even the severest general treatment will not of itself, be sufficient to remedy this particular kind of paralysis. The history, will, at the same time, shew the difficulty which has hitherto existed, of determining upon the proper course of treatment in such cases.

About two years ago, a gentleman, in consequence of a consultation with an English surgeon in Rome, came over to London, to request Mr. Bell to perform an operation upon his face, by which he hoped that a very unseemly distortion would be remedied. But as this happened before Mr. Bell had made those discoveries, by which we have been able to comprehend the nature and cause of the particular kind of paralysis, which produced the distortion, he was then unable to propose any plan of relief. The case, however, naturally made an impression on Mr. Bell's mind, and when he found that I was investigating the nature of the different paralytic affections, he described it to me, as one which would probably be of use in my enquiry.

A short time after this, I met with a gentleman, the state of whose face so exactly corresponded with the description I had received, that I immediately supposed he must be the same person who

had formerly consulted Mr. Bell. On asking him the question, he replied "no, but I know the gentleman you mean, I met him in France a few months ago, and the state of his face is so similar to mine, that I am not surprised, you should have made the mistake; there is, however," he continued, "some difference in the original cause of the distortion in our faces, for on comparing notes with the gentleman you supposed me to be, I found that the distortion of his face, was in consequence of a blow on the head, while in mine, it was caused by a paralytic affection."

According to this gentleman's own statement, the disease commenced with a violent pain below the ear, and in a short time, one side of his face became paralysed. For this paralytic affection, he consulted many eminent men. The first plan of treatment was bleeding, blistering, and starving, the disease being supposed to have its origin in the brain; but as he got rather worse than better, under this treatment, he was put upon a course of mercury, which was carried to such an extent, that he lost several of his teeth. After he recovered from the bad effects of the mercury, he was recommended to attend only to the state of his digestive organs. But the blue pill had no effect upon the distortion. The last advice which this gentleman received, was to wear an issue in his neck; with this, however, he has not complied, as he feared it

would, like some of the other remedies, have only the effect of rendering him more uncomfortable.

As the symptoms in this gentleman's case so exactly corresponded with those described in the first example, and with the results of experiments made upon animals, there can be little doubt of their being in consequence of an affection of the portio dura; and, as he has been deaf in the corresponding ear, ever since the first moment of the attack, it is probable that the trunk of the nerve, as it passes through the temporal bone, is the portion affected. The consequences of the paralysis in this case are now so distressing, that they prove the importance of such a knowledge, as will enable us to ascertain the cause of the symptoms at their commencement. The deformity produced by the distortion of the face, and the wasting of the muscles of the paralysed side, are sufficiently vexatious; but the greatest distress is from the loss of power over the eye-lids of the same side, for the eye, being thus deprived of its natural coverings during night, as well as day, has been almost destroyed by repeated attacks of inflammation.

This last consequence is particularly observable in a porter of the name of Garrity, who may be often seen about auction rooms, in the West end of London. This poor man, about 19 years ago, was attacked by a severe pain, accompanied with

discharge from the right ear. After a paroxysm severer than usual, he found, on getting up one morning, that the right side of his face was paralytic. His present condition, and the description which he gives of the progress of the symptoms, prove that the same results followed this paralysis, as in the case of Richardson already related. But what this poor fellow particularly laments, is, that since the day he was first attacked, he has not been able to close his right eye; and well he may, for the constant exposure of the eye to the light and dust, has been the cause of so many attacks of inflammation, and consequently of the opacity of the cornea, that the eye is now completely destroyed; and this, I fear, will often occur in similar cases, for I have observed, that the eye has always become inflamed in those animals, in which the portio dura has been cut. It is worthy of remark, that the inflammation has been more severe in the dog and in the ass, than in the monkey. One great source of the increase of the inflammation, is the purulent secretion from the conjunctiva; this the monkey wiped away with his hand; but it lodged between the eye-lids of the dog and of the ass, so as to form an additional source of irritation.

The cause of the blindness in Garrity is quite obvious. But here I shall make a short digression from my present subject into the question of another kind of blindness, which, though not directly connected with the subject, of the paper, will per-

haps have the effect of exciting the attention of those who make the diseases of the eye a particular study.

It must be well known to every member of this Society, that the common opinion of the pupil being always immoveable in amaurosis, is founded in error. I had lately a good opportunity of proving this in the eye of a little girl with partial paralysis of the face, and whose case I have detailed in the Journal of Science for April 1822. The only *apparent* defect which this girl had, was paralysis of those actions which are controlled by the right portio dura; but the vision of the right eye was completely lost, although the eye appeared to be in every respect perfect; *i. e.* whether the other eye was open or shut, the pupil of the blind eye contracted and dilated with perfect regularity. When the eye was directed towards the sun, the sound one being closed, the pupil contracted, and when the hand was put before the eye, it dilated; yet, notwithstanding this apparent sensibility of the eye to light, the power of vision was so completely lost, that although a lighted candle was brought close to the child's face, she was not sensible of it until she felt the heat of the flame. To prove that there was no deception practised upon me, which, however, I had not the slightest reason to suspect, I closed the left, and brought my finger so close to the right eye, as almost to touch the cornea; the girl did not appear to be in the

slightest degree conscious of the proximity of my finger, but the moment I touched the eye she started back.

No explanation has as yet been given why the pupil should in some cases of amaurosis remain fixed and unaltered by the exposure of the eye to the different degrees of light, while in others it is as sensible to the stimulus of light, as a perfect eye. It will be very difficult to obtain any conclusive evidence on this question; but circumstances seem to prove thus far, that the motions of the iris depend upon other causes, than merely the state of the retina. They are perhaps, in a great measure, controlled by the fifth nerve. In support of this opinion, which, however, I offer as a mere speculation, I may adduce the common occurrence of a slight paralysis of the levator palpebræ, and of the iris, without the retina being at the same time affected. We know that the fifth pair supplies the levator palpebræ, and that the ciliary nerves which go to the iris, are connected with it.

A good example of complete paralysis of the levator palpebræ, and of loss of power in the pupil, without any affection of the retina, occurred last winter; and I was fortunate enough to have an opportunity of examining the body after death. A young woman had a fungous tumour under the jaw; the cheek of the same side was paralytic: the upper eyelid of the same side had fallen; but

when the eyelid was raised, the patient could see distinctly, although the pupil was fully dilated and immoveable. Upon dissection, it was found that the tumour had extended into the lateral part of the orbit; the fourth nerve ran over the tumour, the third was in the substance of it, but the ophthalmic division of the fifth pair was the nerve most destroyed; the sixth was partially affected. The tumour did not reach as far as the optic nerve. Since all the nerves of the orbit, except the optic, were included in the disease, we cannot draw any further conclusion from this case, than that the motions of the iris do not altogether depend upon the state of the optic nerve. The voluntary power which some individuals possess over the motions of the iris, will perhaps be considered as in some degree supporting the view which I have taken. The members of the Society are, no doubt, aware, that one of their most distinguished associates has this voluntary power over the motion of his iris. Upon an occasion in which the gentleman I allude to, was so kind as to shew me, to what an extent he could exercise this power, I thought I could perceive that the exertion which attended the attempt, had some effect upon the motions of the upper eyelid. At one time, I imagined that there was some correspondence between the internal parts of the eye and the portio dura. This I deduced from observing that some patients who had paralysis of the portio dura, were at the same time affected with symptoms of amaurosis. I had also observed

that a loss of vision was apparently the consequence of cutting the nerve in a dog. However, further experience has induced me to suspect that the cases which I had seen of amaurosis combined with partial paralysis of the face, were merely accidental coincidences.

Trusting that the Society will excuse this digression, I shall now return to my proper subject.

A most remarkable appearance in the face of Garrity is the wasting of all those muscles of the face, which are subservient to respiration and expression. His cheek is so thin, that when he speaks, it flaps about as if it were only skin, and the corrugator supercilii and occipito-frontalis, which are principally muscles of expression, are so wasted, that we might at first sight, suppose they had been removed by operation, and that now the bones were only covered by skin. There can be little doubt that the wasting of these muscles is in consequence of their not having been called into action for many years; since the masseter and temporalis muscles of the same side are not at all diminished in size, being as large as those of the opposite side. A curious example of the effect produced on the growth of the muscles of respiration and expression, by an injury of the portio dura, was afforded in an experiment made upon a young dog. After the nerve was cut, he was taught to snarl whenever a stick was held out to him; this being often repeated, the muscles of the

side upon which the nerve was entire, became very strong, while those on the paralysed side rather diminished than increased as the dog grew older. In a few months, the one side of the face was much larger than the other. We may, every day, see similar results following palsy of the limbs.

In the greater number of the cases which I have seen of this partial paralysis of the face, the eye has been more or less affected; but it does not always suffer. There is a broker in the New Road whose appearance is exactly the same as Garrity's, excepting in the state of the eye; for that of the paralysed side is more useful than the other, although the affection has lasted for thirty-five years. I suspect, however, that in this case the superior branches of the nerve are not much affected. An instance, proving that there are just grounds for such an opinion, will be given presently. I may here add, that on inquiring into the history of this man's disease, I found he had gone through the ordinary severe treatment for paralysis, under the care of the late Dr. Pitcairn; the symptoms having been supposed to indicate an affection of the brain. On asking Garrity, what kind of treatment he had undergone for the paralysis of his face when it first appeared, he said that as it was of no inconvenience to him as a porter, he was unwilling to give up his time or money in endeavouring to get rid of what he considered only a deformity; and therefore nothing was ever tried. It is not very unreasonable

to suppose, that if he had applied for relief, he would have been treated as if the paralysis had been produced by an affection of the brain.

The only other instance I shall at present offer of a patient having been severely treated for a slight paralytic affection, is that of a friend, who is now an eminent surgeon, and attached to one of the first provincial hospitals in England. While my fellow-student, he was attacked with partial paralysis of the face; for this, we treated him as if it had been caused by an affection of the brain. Under this treatment the paralytic symptoms gradually disappeared, but they would probably have subsided without any such severe measures; for it seemed to have been an instance of that partial paralysis from sudden exposure to cold, which generally disappears even without any local treatment. But so convinced was this gentleman that the paralysis depended on the state of his brain, that up to the present day, he is alarmed by the slightest headache, fearing that it is only the precursor of a more serious attack than that which he suffered while a student. I hope the cases here related will set my old friend's mind at ease upon the subject.

Partial Paralysis, connected with a Diseased State of the Brain.

Cases which will be presently detailed, will further shew that we may be mistaken in supposing

that the symptoms of paralysis depend always upon an affection of the brain. But I must now state, that there are certain cases of this kind of paralysis which are intimately connected with the condition of the brain, or I should rather say that the same cause which has produced the local paralysis, may gradually affect the brain. Of this, the following is a common example.

Nov. 30th, *Mary Cummings*, 30 years of age.—About a month ago, this woman was attacked with pain in the right ear, which was followed by a discharge from the tube, and a short time afterwards, she discovered that her face was distorted. Ten days ago, the discharge from the ear stopped. Previous to this, the patient had no pain in the head; but since the discharge ceased, she has suffered much in the temple and occiput; she is giddy and stupefied, and her expression is of that anxious kind, which is so remarkable in those patients, who have a commencing suppuration on the membranes of the brain. The symptoms were relieved by active local and general treatment. Upon this case, I may remark, that a knowledge of the fact, that paralysis of the muscles of respiration of the face is often caused by an affection of the portio dura in its course through the temporal bone, should, in instances where the paralysis is accompanied with pain in the head, lead us to examine the state of the ear, even though we should not be directed to it, by the circumstance of a discharge from the tube.

I have no doubt that the symptoms in this case are familiar to every surgeon; a child suffering in a similar manner, was sent to me about two years ago, from Greenwich. At the time, I could not account for the peculiar paralytic symptoms which were evident when the child cried; but now, I have no doubt that it was from the nerve being affected in its course through the diseased temporal bone. This child died some time after I saw it, in consequence of the disease spreading to the cerebellum*.

* After this paper was read before the Society, I was requested by Dr. Gregory to see a case of paralysis in which there were some unusual symptoms.

On examining the girl, who was the subject of the disease, I was forced to confess, that if the case had occurred to me earlier in the enquiry, it would probably have induced me to give up the investigation; for there was not only double or total paralysis of the left side of the face; but there was also paralysis of the leg and arm of the same side.

The mother of the child could not give me a very clear account of the origin of the disease. Upon observing that the respiratory nerve of the face, as well as the other nerves, was affected, I suspected that the child was deaf. I found, however, that she was not so; but upon inquiring whether there had ever been any thing the matter with the left ear, the mother immediately replied, "O yes, Sir, this ear, at one time, was swelled as large as my fist, and then it broke and discharged a great deal of bad humor from the inside." She then told me that it was some time after the discharge had ceased, that the child, while sitting eating oranges, was seized with a fit and fell down.

The

These two last examples are common; but I believe we shall occasionally meet with instances of this paralytic affection of the face, and a disease of the brain co-existent, but unconnected with each other, although the same cause may have produced both. The following I offer as an example. A gentleman's groom was, six years ago, thrown from his horse; he was so much hurt about the head, that it was supposed his skull was fractured, particularly

The state in which the ear had been is sufficient to account for the derangement of those actions which are regulated by the portio dura; but there is much difficulty in deciding whether the paralysis of the other set of nerves arose from a certain degree of irritation on the brain, in consequence of the disease in the temporal bone, or from some other cause, as in the common cases of hemiplegia, preceded by apoplexy. The circumstance of the paralysis being on the same side of the body, is certainly an objection to the opinion that it was caused by the spreading of that local irritation which affected the portio dura. I cannot at present enter farther into the discussion of this question; but I must observe, that independently of the combination of the two kinds of paralysis, the history of the symptoms, and the appearance of the child, induced me to suspect that this instance was more like a case of epilepsy than of common paralysis.

I have been often asked, during the prosecution of this enquiry, what practical benefit could accrue from this distinction of cases? In the body of the paper, I trust that many examples will be found which prove its utility; and even in this obscure case, the symptoms of affection of the portio dura, led me to discover an important circumstance in the history of the disease, and enabled me to point out the part of the head to which we should particularly direct our attention, if we pursue any plan of local treatment.

as his face was paralytic on one side. However, in about three months, though his face continued distorted, he so far recovered as to be able to go to work. He continued well for three years, the paralysis of the face remaining in the same state; about that time, when walking in the streets, he was seized with an epileptic fit, but from this he so quickly recovered, that he was able to do his duty in the stable, the following day. Since that time, he has had about twelve fits, from each of which he has as quickly recovered; but no change has ever been produced in the degree of paralysis, and the appearance of his face is now very similar to that of Richardson. He has been deaf in the paralysed side ever since he fell from his horse, which, to me, is sufficient proof of the paralysis having been produced by an injury to the portio dura, in its passage through the temporal bone. The histories of epilepsy, and the dissections which I have made of persons who have died of that disease, induce me to believe, that in this case, the epilepsy is not owing to the injury of the temporal bone, but to some disease in the substance of the brain, which had probably its origin in the shock, that the brain in general suffered, when the man fell. Several examples of partial paralysis in consequence of injuries of the head will be given presently.

Partial Paralysis in consequence of Exposure to Cold.

There seems to be one cause of paralysis of the respiratory muscles of the face, which is not productive of such serious consequences, as those I have already described; I mean the sudden exposure to cold; indeed, such cases are so common, that the attack is vulgarly called *a blight.* Three instances of this are given by Dr. Powell, in the fifth volume of the Transactions of the College of Physicians. They are described as cases of complete paralysis of the face, but this we now know to be an erroneous description, since there is only a loss of power over one set of actions. The same kind of cases, I am told, are very common in India, during the prevalence of the cold winds, and it may sometimes be observed in those unfortunate females who walk the streets during the night. In most of the cases, where the paralysis arises in consequence of exposure to cold, it gradually disappears, while in those patients in whom the affection commences by inflammation and suppuration, it seems to be very difficult to cure.

Example of the Paralysis being confined to a part of the side of the Face, in consequence of only certain branches of the Portio Dura being affected.

Before suggesting any plan of treatment, I may state the necessity of our knowing the course of the nerves upon the face, and the sources from

which the several muscles receive their branches; for without this knowledge we cannot apply local remedies with proper effect. The importance of it, in enquiring into the cause of paralytic symptoms, was exemplified in the case of a young lady about whom I was consulted last spring. This lady had for some years, suffered from a nervous affection of the side of her mouth; but she had been lately attacked with what her friends supposed to be a similar disease of the eye-lids. On observing the action of the muscles while the lady was eating, I did not perceive any power deficient, but the moment she smiled or laughed, there was distinct paralysis. It was, however, new to me, to see the muscles of the mouth affected at one time, and those of the eye at another, for I had found in all the experiments where the portio dura was cut, and in the cases where the paralysis had been produced by inflammation of the ear, that the muscles of the eye and mouth were affected at the same moment.

On enquiring minutely into the origin of the complaint, the cause of the difference in this case was explained. The inflammation, which was the original source of injury to the nerve, had been confined to a spot above the molar teeth, so that the branches of the nerve which go to the muscles round the eye, were not included in the disease. The affection of the eye-lid was quite different from that of the muscles of the mouth; for instead

of being paralysed, it was spasmodically affected. It was, however, only that slight twitching which is common in hysterical cases, and would scarcely have been noticed, had it not been supposed to have some connection with the state of the mouth. It is worthy of remark, that this young lady found it exceedingly difficult to regulate the muscles of the mouth, when she made her entry into a room, or was obliged to accost strangers.

As she had been partaking of all the gaiety of a London winter, I recommended her to go into the country, and to attend to the general state of her health. After she had been a short time at the sea-side, the twitchings of the eye-lids ceased, but there was no change produced in the paralysis of the muscles, which had been caused by the previous inflammation of the branches of the portio dura.

Proposal of a Mode of Treatment in Cases of Partial Paralysis of the Face.

The degree of paralysis in the last case though at present slight, is still sufficient to destroy the contour of a very pretty face, and is consequently a subject of much regret to the young lady's friends. But the history of the preceding cases shews more forcibly, the importance of an early cure of this paralysis, for we have seen that the eye generally

suffers, and if the case even be such, that the nerves going to the eye are not affected, we know that the distortion will increase in proportion to the time the affection exists, since the muscles of the paralysed side will diminish in size, while those on the opposite side will probably increase in a proportionate degree. That this result generally follows disease of the portio dura, may be proved any day, for it is almost impossible to walk from Piccadilly to St. Paul's, without meeting several examples of this disease in old men, and in some of whom, one side of the face may be observed to be wasted.

In cases of long standing we can scarcely expect to do much good by any plan of treatment; but in the early stages we may perhaps be able, by active local treatment, to restore the nerve to a power of performing its functions. I cannot as yet offer any examples of the effect of remedies upon the injuries of the portio dura, because the cases which have occurred to me since the discovery of the cause of the paralysis, have existed too long to expect that any benefit would result from the most active treatment.

But we have instances of the cure of the same kind of partial paralysis in other parts of the body; and I think there can be little doubt, that, by following the same plan of treatment in those of the face, we may be successful. At present, I am watching the progress of a case of partial paralysis

which appears to have arisen from a cause analogous to that of several which I have already described. M. C. dislocated his shoulder; after the bone was reduced, and which was easily done, he could move his fingers in the same degree with other patients who have suffered a similar accident; a bandage was put round the arm, but probably too tightly, since the arm swelled, inflamed, and at last suppurated over the middle of the triceps muscle. Ever since the commencement of the inflammation, he has lost the use of the extensor-muscles of the fingers and thumb. The description which the man gives of the parts affected, and the manner in which he traces out the insensible parts of the skin with the point of his finger, clearly demonstrate that neither the median nor the ulnar nerve are affected, but that it is solely the muscular spiral nerve which has suffered. He cannot open his hand; but, by pulling up the fingers with the other hand, he is enabled to get them over the handle of his spade, and then, he says, he can work as well as his comrades; thus shewing that all the flexor muscles are entire in their actions.

The nerve must have been injured either at the time of the dislocation, or by the inflammation which followed the application of the bandage. The latter cause is, I think, the most probable, for such an affection is rarely if ever produced by dislocation; at least, the effect upon the nerves produced by the pressure of the bone generally

subsides when the dislocation is reduced. The man is very positive that he could extend his fingers previous to the inflammation of the arm.

It is now nearly three months since the attack; but we hope, that by active measures, the power of the nerve may be restored, for already, within a week, a smart blister, laid in the course of the inflamed part of the nerve, appears to have produced some effect.

If blistering, and the occasional application of leeches, restore the power of the nerve in this man, we may presume that a treatment somewhat similar will be beneficial in cases of paralysis of the portio dura.

Paralysis of the Face in consequence of Injuries of the Head.

Instances of partial paralysis of the face must have been frequently observed by those who have had the opportunity of seeing many injuries of the head. The case of the groom, which I have already described, affords an example of it. One of the most unequivocal cases is that of the gentleman to whom I have alluded, as having come from Rome to have an operation performed upon his face. He had been knocked down in a scuffle; when he recovered his senses in the morning, he found that

he had lost a large quantity of blood from the ear; since that time his face has been distorted.

While accompanying M. Cloquet, one of the most ingenious and learned surgeons in Paris, in his morning visit to the Hospital St. Louis, he drew my attention to the case of a woman who had some unusual symptoms, produced apparently by a fracture of the clavicle. On examining her, I discovered all the appearances of paralysis of the portio dura; and on farther inquiry, I found, that at the time the clavicle was broken, she had received a blow on the temporal bone of the same side.

I ought here, in justice to the frankness and liberality of M. Cloquet, to state that he immediately and cordially congratulated me on having an opportunity of giving ocular proof of the correctness with which I had described the consequence of an injury to the portio dura, and which he at the same time acknowledged was quite new to him.

In the Journal of Science for April 1822, I have particularly described the symptoms in a case of double or total paralysis of one side of the face, in consequence of an accidental injury of the portio dura, and of the fifth pair of nerves on the same side.

As the case is an example of an affection by no

means common, and as the symptoms might have been mistaken for those of injury of the brain, I shall perhaps be permitted to introduce a slight sketch of it here, particularly as the details given in the Journal of Science were offered merely for the purpose of contrasting the phenomena consequent upon injury of both systems, with those following the affection of one or other of the systems of nerves.

A bricklayer fell from a scaffold thirty feet high; his right clavicle was broken, his right loin and hip were much bruised, and he received a severe contusion on the head, the marks of which were particularly observable in a puffiness behind the right ear, and in bleeding from the same ear and from the nose.

He was in a state of stupor when brought into the hospital; but from this he soon recovered. For the two or three first days, he appeared to suffer only from the effects of *concussion*, never having any of those symptoms which are generally attributed to *compression*. On the fourth day, it was observed that the angle of the mouth was drawn a little to one side, and there was also a degree of irregularity in the contraction of the pupils. On the sixth day, it was remarked, that while he was asleep, the right eye was more than half open, while the left was closed.

The notes of the case were very fully taken, up

to the twenty-fourth day after the accident, and shew that the patient had, during the interval, gone through the common series of symptoms which attend a slight inflammation of the brain which is often the consequence of concussion.

The general appearance of this man's face, about six weeks after the accident, was that of a person who had suffered paralysis from apoplexy*; but when he spoke or laughed, the distortion was increased, the mouth being pulled much more to one side than is usual in those cases.

On examination into the cause of such an unusual degree of distortion, it was evident that both the portio dura and the fifth pair of the same side had been affected. The phenomena by which this is proved are particularly detailed in the Journal of Science: the description of them I need not repeat here, but merely state that they differed from those presented in the common cases of partial paralysis, not only in the face being distorted while the muscles were at rest, but also in the power of the

* In consequence of the clavicle of the same side having been broken, and the loin much injured by the fall, this patient had so much the appearance of a paralytic in walking, that when the degree of loss of power over the limbs was coupled with the distinct marks of paralysis of the face, it led many to believe that every symptom was caused by the injury to the brain. That this opinion was incorrect, was proved when the broken clavicle united, for then, though the paralysis of the face was as distinct as ever, the power over the arm and leg was completely restored.

muscles being deficient during the act of eating. The sensibility of the skin of the same side was also in a great measure destroyed.

The symptoms differed from those in a case of hemiplegia in several important circumstances: first, in the paralysis being confined to the face; secondly, in its being on the same side with that on which the head was affected; and, thirdly, in the palsy being more evident when the patient was made to sneeze or laugh.

The paralytic symptoms were, I think, to be ascribed, not to any affection of the brain generally, but to an injury or inflammation of the portio dura, and a great part of the fifth nerve, either near their origins, or in their passage through the bones of the head.

My reasons for forming this opinion are, that the state of the actions regulated by the portio dura was similar to what is found in cases and experiments where the nerve has been cut. The bleeding from the ear, and the consequent deafness, may be given as proofs that the petrous portion of the temporal bone through which the nerve passes had been injured.

The evidences that we had of the fifth having been injured in its transit through the bones, were, first, in the paralysis being on the same side of the

head as that struck in the fall; secondly, in the hemorrhage from the nose; thirdly, in the sensations, both of common feeling and of taste, being destroyed on one side, which is not *always* the consequence of apoplexy, but which must happen if the *trunk* of the third division of the fifth be injured; and, lastly, in the phenomena according with those which are observed when the branches of the fifth are cut.

The symptoms of general affection of the brain, appeared to have been caused by that inflammatory state, which is often a consequence of concussion, but which almost always subsides without leaving any degree of partial paralysis.

Paralysis of the Face in consequence of operations upon it.

The last examples of this kind of paralysis, which I shall at present offer, are those which have followed certain operations on the face.

I recollect that some years ago, in the removal of a tumor from before the ear, the moment the branches of the portio dura were cut, the girl called out, "O, I cannot shut my eye." The cause of this, though obscure at the time, must now be evident.

The consideration of the effects of cutting the branches of the seventh nerve, will induce us to make our incision in these operations parallel to the branches of this nerve, and not across them. It will make us careful to save nerves, which, heretofore, were considered of little moment.

The general question of the restoration of the functions of nerves, which have been divided, will probably be more satisfactorily decided by experiments upon the portio dura, than upon any other nerve, since its functions are now distinctly ascertained, both by comparative anatomy, and by experiments.

Upon the deductions which have been drawn from experiments on the par vagum, I shall, at present, only remark, that since many animals which have no par vagum, have stomachs of powerful digestion; the only inferences that can be drawn from the phenomena presented upon cutting the par vagum in the rabbit, &c., are, that in consequence of this bond of connection between the stomach, and the organs of respiration, and circulation being destroyed, the functions of the stomach will be more or less disturbed.

With reference to those experiments by which it is attempted to be shewn, that the nervous influence passes from the one portion of a nerve to the other, when the cut surfaces are brought into contact, I may state, that after having divided the portio dura of a dog, I placed the two ends of the nerve nicely together, and then stimulated the nostrils, but no effect was produced on the muscles regulated by the nerve. I varied the experiment, by stimulating the portion of the nerve next the brain, with galvanic forceps, (the cut surfaces being still in contact); there was then a convulsive action in the muscles of the nostril, but it was the same kind of convulsion as that produced by touching the muscles themselves, and was entirely different from that very peculiar action which is displayed if the stimulus be applied to the nerve when entire, or even to the lower portion of it when it is divided.

It is almost needless to state, that there are often certain tumors before the ear, the extirpation of which is so necessary, that in such cases the paralysis must be considered of minor importance. However, if we have an accurate knowledge of the small nerves which pass from before the ear to the mouth and nostril, we may, in extirpating tumors from the cheek, preserve these twigs, and thus avoid substituting distortion for the slight deformity caused by the tumor which we wished to remove; a result which has hitherto frequently followed operations on the face, in consequence of our proceeding on the old idea, that although the parts might be deprived of the supply of nerves from the portio dura, they would still receive sufficient nervous influence from those of the fifth pair.

I may be allowed to suggest that the discovery which has been made of the difference in the functions of the two sets of nerves upon the face, will, perhaps, alter the question of the pathology, and of the operations for the disease called tic doloureux.

PART II.

Enquiry into the State of the Superadded Nerves in Cases of Palsy following Apoplexy.

The examples already given, will probably be considered sufficient evidence in support of the opinions which have been advanced, as far as they relate to affections of the face.

The greater complexity of the nervous system of the viscera, and of the parts combined with them, and the obscurity of the symptoms consequent upon paralysis of the internal parts, make it more difficult to prove that the same order holds in their paralytic affections; but still, the facts already discovered, entitle us to expect that a clue will eventually be found, by which we shall be able to trace the symptoms of palsy of other parts to their source as easily as we already can those of the face.

In making some observations upon this question, I must crave the indulgence of the Society for entering a little into speculation; my excuse must rest on the hope that it may excite others to enquire into the causes of those symptoms of palsy which are of common occurrence.

It is well known that the muscles of the pharynx and œsophagus, the muscles of speech and the sphincter muscles, all of which are supplied with nerves from the superadded system, are occasionally paralysed, without there being, at the same time, any symptom of palsy in the limbs. It is also as well established, that the muscles just enumerated, and those carrying on the *vital functions*, viz. those of respiration, circulation, &c. are seldom impaired in the common cases of hemiplegia. Indeed we have daily opportunities of observing, that respiration and circulation are seldom affected in the common cases of palsy, and that although a patient may have entirely lost the use of the limbs of

one side, that still his sphincter muscles are unimpaired. It is needless for me to state, that when the functions of this latter class of muscles are affected in apoplexy, the prognosis is very unfavourable.

In the work of one of the most learned writers on apoplexy, (Dr. Cheyne of Dublin) there is a very extraordinary example given of the functions of an important organ continuing perfect, while one half of the body was paralysed. A woman was attacked with apoplexy, and lay hemiplegic for two days; at the end of that time she was delivered of a living child, the uterus acting in the most perfect manner, so as to expel the fœtus and the secundines, and then contracting regularly, so that the flooding which might have been anticipated, did not take place.

Since partial paralysis is commonly owing to some local affection, it is often possible to discover the cause by dissection; but where there is palsy of one side of the body, or where the internal organs are affected, there is generally so much disturbance to the whole structure of the brain, as will probably prevent us from ever being able to trace each class of symptoms, to the affection of a particular part. In the present state of the enquiry, it will be impossible to offer more than a general surmise, as to what parts of the brain are affected, when there is common hemiplegia, or when there is paralysis of some of the internal organs.

According to the accounts given of dissections of cases, where the patients have recovered from the immediate attack of apoplexy, and have lived for some years, with a palsied state of one side of the body, the marks of injury to the brain have been commonly found in the centre or upper part. Here, I may add, that a patient, whom I occasionally see, with complete paralysis of the original class of nerves of one side of the body, without any perceptible affection of the superadded system, being in fact, in a state similar to that of common hemiplegia from apoplexy, became so, in consequence of the destruction of a portion of the upper part of the brain, after fracture of the skull. There are very few histories of the dissection of cases, where an affection of the respiratory organ was the principal symptom preceding death; in the work of Dr. Cheyne, there is a very interesting case of apoplexy detailed, in which the chief symptoms were those of irritation of the stomach, and difficulty of respiration, "about an hour and a half after the attack, his breathing was extremely irregular and laborious. Inspiration would cease for nearly a quarter of a minute, and then go on with tolerable regularity for a little; his pulse was slow and irregular, sometimes intermitting; he died about midnight, two hours and a half after his breathing became affected." On examination of the body, a cavity containing a quantity of blood was found in the pons varolii. Perhaps it will be allowed that in this case, the particular class or symptoms arose in consequence of injury to a part of the brain,

near to that from which the par vagum and other respiratory nerves arise.

It is a happy circumstance for this inquiry, that the case has been recorded by a gentleman so well known for minuteness and correctness of observation, since the coagulum, which is supposed to be the cause of the symptoms in apoplexy, is seldom found confined to one particular spot, but extended through a considerable part of the substance of the brain; and therefore, although from the rupture of a vessel near the origin of the respiratory nerves, the first symptoms of apoplexy may occasionally be those of disturbance to the respiratory organs, still, in consequence of the effusion of blood increasing, the other parts of the body will, in a short time, become affected. This is, perhaps, the reason why there is generally *total* paralysis before the patient expires.

In the work of M. Serres several cases of total paralysis are given. He describes the patients as dying with symptoms of asphyxia, or in a manner similar to animals in which the par vagum of both sides has been divided.

In the account of the dissection of these cases, it is observed that the effusion seemed to have taken place near the pons Varolii. One of them is very similar to that related by Dr. Cheyne, the

coagulum having been found in the same part. Upon this case M. Serres makes the following remarks: "C' était la premiere fois, depuis que mon attention etait fixée sur les apoplexies cérébrales, que je trouvais les lobes sains, sur un cadavre qui avait offert pendant la vie une paralysie bien constatée." In the description of the examination of the chest, he says, "Un phénomene singulier et que nous ne devons pas passer sous silence c'est que les poumons étaint emphysémateux, les cellules pulmonaires étaient boursoufflées et remplies d'air, j' attribue cet effet à la paralysie des deux nerfs pneumogastriques."

Upon this question I shall not at present offer any further observations, as a paper directly connected with the enquiry, and containing facts which will form a secure basis for reasoning upon the symptoms observable in disordered respiration and circulation, has been lately presented to the Royal Society by Mr. Charles Bell.

I shall, however, take the liberty of trespassing still more upon the time of the Society, by making a few remarks upon a very curious question, which has particularly excited the attention of physicians in all ages since the time of Galen:—

Why sensation should remain entire in a limb when all voluntary power over the action of its mus-

cles is lost, or why muscular power should remain when feeling is gone?

The attention of Galen was particularly directed to this question, in consequence of his having been called upon, by some of his contemporaries, to account for the manner in which he had cured a partial paralysis of the finger by applications made to the spine.

In answer, Galen told them, that two sets of nerves went to every part; one to endow the skin with sensibility, the other to give the muscles the power of voluntary action. This opinion was probably founded on a mere theory; but the facts lately discovered, and the observations which have been noted in attending to the phenomena of disease, though they do not afford absolute proofs of the correctness of Galen's supposition, still they go far to establish the fact, that every part of the body which is endowed with two or more powers, is provided with a distinct nerve for each function.

The *form* of the nerves, which at the same time endow the skin with sensibility and the muscles with the power of voluntary motion, is such that they appear to be single cords; but if we examine the origin of any of those nerves, we shall find that it is composed of two packets of fibres which arise from distinct parts of the spinal marrow. These origins are soon enveloped in the same sheath, so

as to appear, to a superficial observer, to form a single nerve.

It is not too much to suppose that either of these origins may be affected while the other remains entire. To prove this by ocular demonstration will perhaps be impossible, and therefore the question will probably remain undecided. But we have already seen examples of the consequence of injury to a nerve that has a single root, viz. the portio dura: for if we cut it, there will be only one set of actions paralysed, while by dividing a nerve which has a double origin, viz. the fifth, we shall destroy two powers, viz. voluntary motion and sensibility. We know also, that when we cut through the trunk of a nerve going to the hand, we destroy both sensibility and the power of motion.

In reference to this subject, I shall state the result of certain experiments which were made about thirteen years ago, by Mr. Charles Bell. The two sets of filaments by which each spinal nerve is connected to the spinal marrow were exposed: on irritating one set, convulsion of the muscles upon which the nerve was distributed, ensued; but when the other was excited, no perceptible effect was produced. These experiments we have often repeated, and always with the same results; but from the violence necessarily used in making them, it has been difficult to ascertain which of the filaments

bestows sensibility on the part. It was easily shewn, that if only the posterior set was destroyed, the voluntary power over the muscles continued unimpaired; but the pain necessarily attendant upon the performance of the experiment, prevented us from judging of the degree of sensibility remaining in the part.

It was, I believe, the result of these experiments, which induced Mr. Bell to give an opinion nearly similar to that of Galen, in a short essay on the Anatomy of the Brain, which was printed and distributed among his friends in 1809. An opinion somewhat similar has been lately offered by Dr. W. Phillip, in answer to a query of Dr. Cooke's.

If the view which I have here taken of this question be correct, it may lead to this rule of practice. If only one set of functions of a spinal nerve be deficient, we should apply our remedies to that part of the system from which the nerve arises; but if both functions are impaired, we must then direct our inquiries to the state of the nerve in the whole course, from its origin to its distribution, as the loss of power is probably owing to some affection of a part of the nerve, after the two sets of filaments by which it arises, are united together.

I trust it will not be presuming too much, to expect that the detail of the cases in this communication, will excite the members of our profession

to inquire into the discoveries which have of late been made on the anatomy and functions of certain nerves.

The effect which these discoveries have already had on the minds of students, I have had ample opportunities of observing. The young anatomist, now, instead of considering the study of the nervous system as a labyrinth into which he dares not venture, enters upon the investigation with the conviction that it will prove more satisfactory and more interesting, than that of any other department of the science of anatomy. By examining the nervous system in animals less complicated in their structure than man, he is at once able to comprehend the grand arrangements, and, from the nomenclature of the principal nerves corresponding with their functions, he can, in a very short time, make himself master of that, which, to students of former years, was matter of the utmost labour.

Those members of the Society, who, while students, spent hours and days in attempting to shew all the nerves on the side of the neck and chest, will be able to appreciate the advantages gained by the discovery, that those nerves are in number and intricacy, in proportion to the complex nature of the respiratory organs. I may, perhaps, be permitted to suggest to those who are anxious to investigate the anatomy and physiology of the res-

piratory nerves, that they will find the inquiry very much facilitated by the dissection of some of the lower animals.

In the greater number of the mammalia, the nervous system within the thorax, is nearly the same as in man. In the abdomen, it has relation to the intricacy of the intestinal canal; hence, it is more complex in the ruminating, than in man, or the truly carnivorous animal. In the neck and face, it bears the same relation to the parts. If an animal has little or no power over the voice, and breathes only by the nostril, as the horse or ass, the arrangement of the respiratory nerves is particularly simple; and if we compare the nerves on the neck of the ass, with those of the dog, which breathes principally by the mouth, we shall be able to understand the complication of the nerves in the neck of man, who breathes not only by the nose and mouth, but has more power over the organs of respiration as vocal instruments, than any other animal.

AN ACCOUNT

OF

SOME CIRCUMSTANCES, IN WHICH

UTERINE HÆMORRHAGE

MAY OCCUR,

WITHOUT TO PRODUCE ALARMING SYMPTOMS,

THOUGH

THE UTERUS CONTRACTED IN THE ORDINARY DEGREE.

By ROBERT GOOCH, M.D.

FELLOW OF THE WESTMINSTER LYING-IN HOSPITAL, AND LECTURER ON MIDWIFERY AT ST. BARTHOLOMEW'S HOSPITAL.

Read June 26, 1821.

HÆMORRHAGE from the uterus, after delivery, is attributed to insufficient contraction of that organ. We infer security from hæmorrhage, if the uterus be contracted; and that the uterus is contracted, if it feel small, round, and firm. This I believe to be, generally, the truth; yet the observing practitioner must have been frequently struck by the little proportion that existed between the want of contraction and the degree of hæmorrhage; having found the uterus bulky without any hæmorrhage, and a profuse hæmorrhage without greater bulk of uterus. Nay, further, I have witnessed a profuse hæmorrhage though the uterus had contracted in the degree which commonly indicates security; and I have ventured to do what is seldom justifiable, separate the placenta before the uterus had contracted, without more hæ-

morrhage than after a common labour. What is this circumstance which has so great an influence that its presence can cause a moderately contracted uterus to bleed profusely, and its absence can cause an uncontracted uterus to bleed scarcely at all?

Experience has taught me that there are two circumstances in which a hæmorrhage sufficient to produce alarming symptoms may occur, though the uterus feels contracted in the ordinary degree.

1st. The effect which loss of blood produces on the system depends not only on the quantity lost, and the rapidity with which it flows, but in a great degree likewise on the constitution of the patient. Some persons are singularly prone to syncope. If these, on the separation of the placenta, lose rather more blood than usual, it will affect the constitution as much as a profuse hæmorrhage will in others, and this trifling excess will not be indicated by any thing unusual in the size of the uterus; the discharge is often more or less, without any corresponding varieties of bulk that I can perceive. Thus there may be a hæmorrhage sufficient in such cases to produce alarming symptoms, though the uterus feels contracted in the ordinary degree. The following case is a specimen of what I mean:

I had delivered a lady of her first child, after a

short and easy labour. About ten minutes had elapsed; the discharge was not great, though more than usual; through the parietes of the abdomen the uterus felt round, firm, and not larger than is common before the removal of the placenta. This was the state of things when she suddenly exclaimed that she was going to faint; that she knew the feeling, for she was very subject to it; a fatiguing walk would often bring on long fainting fits; a minute afterwards she fainted away. An intelligent matron of a lying-in hospital, who was present, said that she did not remember such an occurrence with so contracted a uterus, and that she did not know it was possible. It is needless to relate minutely the remainder of the case. Suffice it to say, that for a long time she continued one minute reviving, another sinking into a death-like faintness, a state which the most experienced cannot watch without painful anxiety.

Whenever syncope is attended by so moderate a hæmorrhage, it admits of dispute whether the one is the cause of the other; yet, in the cases which I am alluding to, I entertained no doubt about it; first, because the faintings did not occur till the separation of the placenta, and consequent flow of blood; and secondly, becaue though not very profuse, it was more so than usual.

Sometimes the unusual susceptibility to syncope is not natural to the constitution, but the acci-

dental effect of an exhausting labour, and, under these circumstances, I have generally found that the constitution is affected not with simple syncope, but with that powerless and agitated state of the vital functions, which, in the technical language of our age, is called nervous irritation. These are the cases I believe where the best cordial is an opiate.

I was attending a lady, thirty-six years old, in her first labour. Of her mother and three daughters, all but one, have, in their first labours, been delivered with the forceps. She had a severe and protracted labour, and no longer feeling justified in postponing the delivery, I applied the forceps. The external discharge was not greater than usual; the uterus, after the removal of the placenta, felt rather, but not very, large. She had not been tranquil since the extraction of the child, but about twenty minutes afterwards her appearance alarmed me greatly. Her heart beat with indescribable rapidity, her pulse was countless, she breathed so quick and short that, to use her own expression, if it became quicker and shorter she should not breathe at all, and she felt as if she was dying.

I had two duties to perform; one, to take care that the symptoms were not kept up, nor caused by internal hæmorrhage; the other, to administer what I thought most likely to tranquillize these alarming symptoms. I passed my hand into the uterus; it contained a good deal, I guess a pound

and a half, of coagulated blood; I scooped it out with the hollow of my hand. There was no occasion to irritate the uterus to contract; the instant it was empty it shut like a spring, and when I put my hand on the outside I found it not more than half its previous size, but the symptoms continued as alarming as ever. I now gave her a dessert spoonful of Hoffman's æther, and fifty drops of laudanum, and then sent off for the family physician. When he arrived the symptoms had abated so much, as to relieve me from my anxiety; the pulse was slower, the breathing more tranquil, and she felt disposed to sleep. She continued to sleep nearly two hours while we remained in the house, then awoke for a few minutes, slept well through the night, and awoke the next morning without any vestige of her symptoms, sensible to herself; but her pulse continued frequent for many days.

2nd. After delivery, under ordinary circumstances, the contraction of the uterus prevents hæmorrhage, by occasioning a sufficient closure of the blood vessels to resist the ordinary force of the circulation. It appears reasonable to suppose, however, that if the force of the circulation was *extraordinarily* great, it would be able to overcome the *ordinary* closure of the orifices, and that thus a *profuse* hæmorrhage might arise although the uterus was contracted. That this event, so probable in point of reason, is true in point of fact,

was first fully disclosed to me by the following case:—

April 10, 1815. I delivered Mrs. S. W. of her second child; for many hours before the accession of labour she was flushed, and had a very full quick pulse. Abstinence from meat, wine, and warm drinks, a cool room, and a saline purgative, diminished, but did not remove, this state of the circulation, which continued in a considerable degree when the child was born: it was expelled very gradually, and, after the removal of the placenta, the uterus felt in the hypogastrium contracted in the ordinary degree; nevertheless, about twenty minutes afterwards there came on one of the most frightful hæmorrhages I ever witnessed; by the introduction of the hand, and the application of cold, however, it was speedily arrested.

It was somewhat more than a year afterwards when she informed me that she was pregnant again, and coming to town to lie in. As she arrived only two or three days before she fell in labour, I did not see her till she was taken ill; but then as soon as I entered her chamber, I was struck on observing the same state of circulation that had preceded her former labour; she was sitting in her easy chair with a red face, and a throbbing pulse. I had not been many minutes in the room before the pains became so strong it was necessary to put her on

the bed, and soon afterwards the child was born; it could not be expelled more gradually; after the head was born, another pain expelled the shoulders, another the body, and another the limbs. I cut the chord, placed my hand on the abdomen, and felt the uterus contracting in the usual degree, yet a few minutes afterwards the blood burst out with prodigious impetuosity. The fearful scene which followed, I need not depict; it is enough to state, that by the introduction of the hand and the application of cold, the hæmorrhage was speedily suppressed, yet it bleached her face, and for many days she could not sit up without faintness.

I had now witnessed two labours in the same person, in which, though the uterus contracted in the ordinary degree, profuse hæmorrhage had nevertheless occurred; let me be understood—after the birth of the child, I laid my hand on the abdomen and felt the uterus within, of that size and hardness which is generally unattended by, and precludes hæmorrhage; in both instances the labour had been attended by an excessively full and rapid circulation. I could easily understand that a contraction of the uterus, which would preclude hæmorrhage in the ordinary state of the circulation, might be insufficient to prevent it during this violent action of the blood-vessels, and the inference I drew, was, that in this case, the hæmorrhage depended not on want of contraction of the uterus, but on want of tranquility of the circulation, and

that if ever she became pregnant again, a mode of treatment which would cause her to fall in labour with a cool skin and a quiet pulse, would be the best means of preventing a recurrence of the accident.

It was not very long before I had an opportunity of trying the truth of my doctrine, and the efficacy of my treatment, for about twelve months after this confinement, she called on me to tell me that in about four months she should require my attendance again.

The plan I advised was this, to avoid fermented liquors; to take meat only thrice a week; a purgative of salts and senna twice a week; a scruple of nitre three times a day: this she began two months before she expected to be confined, and continued it up to the full time. I saw her when she was expecting her labour every hour, and had the satisfaction to find her with a cool skin, and a soft pulse under eighty. She was to lie in at her own house a few miles from town; I was to attend her there; for fear I should not arrive in time, the neighbouring surgeon was to be in the house. I was sent for four days afterwards; when I arrived she was not delivered; but I was mortified to find, that since our last interview, her pulse had sprung up, and there was now the old heated skin and hurried circulation, though in a far less degree, and this the surgeon said, had been the case for two days. The labour came on, the child was gradually ex-

pelled, and after the placenta had separated and was removed, the surgeon put his hand on the abdomen, and said he had seldom felt the uterus more contracted so soon after delivery; yet within a few minutes there came on a flooding; like what I believed to be the cause, it was trifling to what I had formerly witnessed, and was readily suppressed by a cold wet napkin thrown flap upon the belly; but it was enough to produce syncope, and detain us in the house several hours longer than we should otherwise have remained there.

In process of time she became pregnant again. She pursued the same plan, with only this addition, that when she came within a fortnight of her confinement, she had twelve ounces of blood taken from her arm, and when a few days, eight ounces more. She fell in labour, and as soon as I entered the chamber, the first thing I did was to feel her pulse; it was as soft and slow as I could wish. After the birth of the child and the removal of the placenta, the uterus contracted not more than in her last labour; but not the smallest degree either of flooding or faintness took place.

I have met with other cases similar in kind, though less striking in detail. I have seen a strong cordial given unnecessarily towards the end of labour, excite inordinate action of the heart and arteries, the consequence of which was, that after the child was born, though the uterus contracted

in the ordinary degree, the separation of the placenta was followed by a flooding. On the contrary, I have ventured to separate the placenta while the uterus remained largely dilated; but the circulation being languid, no more blood was lost than after an ordinary labour.

How often a disturbance of circulation plays an important part in uterine hæmorrhage it is difficult for an individual to know; but I suspect sufficiently often to deserve the especial attention of practitioners. I advise them when they meet with patients subject to hæmorrhage after delivery, to notice the state of the circulation before labour, and if disturbed, to employ means for tranquillizing it before labour comes on. I advise them during labour, to use cordials cautiously, lest the placenta should separate during an excited state of circulation. I advise them after delivery, though the uterus may feel contracted, to be slow to leave their patient, if the circulation be greatly disturbed.

In the foregoing observations, the reflecting reader may suggest an apparent inconsistency, as I attribute the hæmorrhage *not* to want of contraction of the uterus; yet in arresting it, I resort to cold and the introduction of the hand—remedies which act by exciting it to contract. The difficulty is easily removed; for though, in a disturbed state of circulation, the ordinary contraction of the uterus may

not be sufficient to prevent hæmorrhage, yet a greater degree of contraction may. Besides, after a hæmorrhage has occurred, so as to produce faintness, this faintness is followed by a relaxation of the uterus, and this relaxation still further tends to augment the hæmorrhage. Thus a uterus which has become contracted, sometimes again becomes relaxed, a circumstance which, though seldom mentioned by writers, is, I believe, not unknown to the observing practitioner. I find the following aphorism in the second part of the Treatises on Midwifery, by Dr. Boer, the celebrated professor of that art, at Vienna, Page 116, Aph. 4th. "The uterus is commonly found contracted immediately after delivery; nevertheless it can again and even repeatedly relax, and thus give occasion to floodings. Most commonly this happens in weak patients, when the labour had been slow and anomalous."

I have thus fulfilled the principal object of my paper, yet there occurred other circumstances in these successive labours which I think worth relating, because they throw light on some important points in the treatment of Uterine Hæmorrhage.

The first time I attended this lady, after the violence of the hæmorrhage was over, although the abdomen was covered with pounded ice, it returned again and again, slightly in degree, yet sufficiently, in the debilitated state of the patient, to produce

alarming recurrences of faintness; the uterus too, which had become firm and distinct, became so soft it could no longer be felt. In hæmorrhages from the uterus, these alternations of contraction and relaxation, with cessations and recurrences of bleeding, are familiar to the observing practitioner. Finding the ice so inefficient I swept it off, and taking an ewer of cold water, I let its contents fall from a height of several feet upon the belly; the effect was instantaneous; the uterus, which the moment before had been so soft and indistinct as not to be felt within the abdomen, became small and hard, the bleeding stopped and the faintness ceased; a striking proof of the important principle, that cold applied with a shock, is a more powerful means of producing contraction of the uterus than a greater degree of cold without the shock.

After the second labour, at the beginning of the hæmorrhage, I found the placenta separated, and lying in the vagina; I removed it; the hæmorrhage abated, but a few minutes afterwards it returned as violently as at first; my patient turned white and faint, and said the room was going round with her. I had been talking on the subject with Dr. Rigby, at Norwich, who told me that in hæmorrhage from the uterus, after delivery he had found Le Roux's remedy the most effectual, and that it had unquestionably enabled him to save several lives, which must otherwise inevitably have been lost. I took several handker-

chiefs, soaked them in vinegar, and passed them one after the other into the vagina, so as completely to fill it; this effectually prevented all external hæmorrhage; I no longer felt the blood pouring over my hand; the uterus began to harden, and my patient complained of pain; the colour came into her face again, and her faintness she said was gone. These favourable appearances, however, lasted but a short time; the pains ceased, the uterus grew soft and seemed to swell, the pulse became thread-like and weak, and she turned ghastly pale. It was plain that though I had prevented the blood from escaping externally, it was flowing into the uterus in great quantity, and that I had only converted an external into an internal hæmorrhage. Feeling herself sinking, she screamed out she should never see her children again, and entreated that she might see her husband, and take leave of him before she died. The next instant I thought she had realized her fears, she sunk into the pillow pale and senseless, her face became distorted, and her limbs convulsed.

My belief now is, that when hæmorrhage occurs after the removal of the placenta, the quickest way to stop it, is to introduce the left hand closed within the uterus, apply the right hand open to the outside of the abdomen, and then between the two to compress the part where the placenta was attached, and from which chiefly the blood is flowing. When the hand is introduced merely as a stimulant,

there is an interval of time between its arrival within the uterus and the secure contraction of this organ, during which much blood is often lost. By directing the hand to the very vessels from which it issues, and compressing them as I have described, this quantity is saved. If I may judge by my feeling, the blood stops, in a great degree, even before the uterus contracts; the hand acts first as a tourniquet, then as a stimulant. It is true we cannot tell with certainty where the placenta was attached, and consequently where the pressure should be applied; but as it is generally attached to or near the fundus, if the pressure be directed there, it will generally be right. Besides, after the child is born it is often several minutes before the placenta separates and descends; if, during this interval, we pass up the finger along the chord and observe at its entrance into the uterus, whether it turn towards the front, the back, the right or left side, or straight up to the fundus, we shall form a tolerably exact idea of the spot to which the placenta has been attached in this individual case.

But to return to my patient. As it was my duty no longer to rely on the remedy I was using, I drew out the handkerchiefs and applied my hands as I have described with the most immediate and happiest effect; the bleeding stopped, my patient came to herself, and whilst *she* complained of pain, *I* felt the uterus contracting; here was an end of the hæmorrhage and the alarm, and though for many

her face looked bleached, and she almost fainted in the upright posture, she recovered without any untoward circumstance.

It has been said that it is impossible to make the uterus contract during syncope, and consequently that we ought to use means for reviving the patient, before we employ means for exciting the uterus to contract. I did not find this to be true. Without stopping to revive my patient, I immediately introduced my hand and compressed the uterus, the hæmorrhage stopped, and she came to herself again. It may be said that the hand in the uterus roused the patient, and that it was not till she recovered from the syncope that the uterus contracted; but the question at issue, is not whether the contraction or the recovery is the primary occurrence; but whether we shall employ cordials to revive the patient before we employ means for inducing contraction of the uterus. Besides, the advice seems as erroneous in principle, as it is contradictory to experience, for if the organs be incapable of being stimulated during syncope, how can stimulants introduced into the stomach revive the patient; this practice shows that the stomach, at least, is excitable, and if the stomach, why not the uterus?

OBSERVATIONS

ON

COMPOUND FRACTURES.

By JOHN DUNN, Esq.

SURGEON, SCARBOROUGH;

COMMUNICATED

By Mr. SAMUEL COOPER.

Read Dec. 12, 1820.

Scarborough, Oct. 30, 1821.

IN the last volume of the Transactions of the Medical and Chirurgical Society, I communicated a case of removal of several of the tarsal and part of two of the middle metatarsal bones, which was followed by complete success, both as to the preservation of the motions and the seemly appearance of the foot. I now beg leave to transmit two cases of compound fracture, in which the limbs have been saved by a similar removal of large portions from the middle of the cylindrical bones; and one of simple fracture, in which a projecting portion of bone was sawn off with equal success.

On the 17th of March, 1821, John Harper, a fine lad, of fourteen years of age, carelessly riding at a full trot, was thrown from his horse; as

one of his feet hung in the stirrup, the animal took fright, ran away with him at a gallop, till the girth broke, and he fell to the ground. On the arrival of Mr. Hagyard, the surgeon at Hunmanby, where the accident happened, he found the right leg dreadfully fractured; the broken ends of bone projecting from a wound of immense extent, and a portion of the tibia detached, which he removed. After placing the bones in contact, Mr. H. sent for my partner, Mr. Travis, and myself, expressing the greatest doubt "whether the resources of surgery were competent to save the boy's limb." We arrived by candle-light, and found the poor lad in a small and wretched hovel, extended on a couch, with a large wound, and destruction of the skin of the middle of the leg; the upper portion of the tibia projecting like a stick, unconnected with any of the soft parts, and deprived even of its periosteum, to the extent of between two and three inches, and the lower portion denuded of all covering to the length of three-fourths of an inch. The fibula was also fractured near the knee, and in the centre of the leg, so that it was divided into three pieces. It was, however, so connected with the surrounding parts, that the spiculæ of bone could only be discovered by the insertion of the finger into the wound. The teguments on the posterior part of the limb, although much bruised, were not deadened; and the circulation could be distinctly traced along the course of the posterior tibial artery. A considerable hæmorrhage took

place at the moment of the accident, but it was now suppressed. The wound was six inches or more in length, and as many in breadth; but the boy was comparatively tranquil. On consultation, the grand question was, whether to amputate the whole member; to put it up in splints as it was; or to saw off the denuded rough extremities of the tibia, and treat it as an ordinary compound fracture. In this dilemma, which required immediate decision, we determined upon the last expedient. The tourniquet was therefore applied, the broken ends of the bone raised from the wound, and whilst the limb was held steady by one, and a bone knife kept under the exposed portion of the tibia by another of my friends, I successfully amputated the two extremities of the fracture, including about *three* inches of the whole cylinder of the tibia. We were unable to reach the fibula with any instrument, so that the two portions of the tibia could not be brought within an inch and a half or two inches of each other, without projecting the spiculæ of the former into the surrounding muscles. One vessel in the bone bled after the operation, but the hæmorrhage instantly stopped on the application of pressure. Stitches were now passed through the edges of the wound, their sides were drawn as nearly together as convenient, strips of adhesive plaster were applied round the limb, with an eighteen-tailed bandage and splints. The boy was laid in an extended position, with the leg a little elevated upon a pillow.

An opiate was administered, and small doses of Epsom salts prescribed for the morning.

8th.—He passed a good night; pulse about 100; his bowels, after a few spasmodic pains, were relieved; he had a few startings of the limbs in the morning, which soon yielded. A very low diet was enjoined.

On our visit on the 12th we found him so well, and the fever so trifling, that we did not dress the wound. He had used no medicines; his foot was scarcely swelled; the limb was without pain, and steady. A small opening was made through the dressings to liberate any possible accumulation of pus; diet a little improved. When I visited him on the 14th, a week from the accident, the discharge and fetor had so increased that it was judged necessary to remove the dressings. This was a delicate operation, which we performed as seldom as possible; only a few drops of blood, however, escaped from the disturbance; the stitches were beginning to separate, a large dead piece of skin was detaching, and a sinuous ulcer broke out above the wound, which discharged a table spoonful of matter. On account of the trouble of removing the adhesive plaster, strips of lint spread with cerate were now substituted. Our patient went on favourably, with a slight interruption one night, from the alteration of position. 16—Discharge increased, but by no means severe, very

healthy; the dead parts separated, the stitches removed; the wound so covered with granulations that the bones were not discernible; the edges of a fine cream colour, particularly in the lower parts; pulse not more than 90, tongue clean; no pain, indeed he has been altogether remarkably exempt from suffering of every kind. Diet generous; wine and porter allowed. Dry lint to be used without ointment, in the form of strips; the limb to be dressed daily, to keep it from sucking in the discharge; an oiled case to be placed under it, and the matter to be well absorbed with a sponge, to preserve cleanliness without disturbance. 26.—The discharge rapidly abated, the wound filling up very much, the bowels regular, aspect of the case highly favourable.

April 6.—The wound healing fast on one side; but, on the other, the granulations were large, loose, and flabby; the cuticle polished, and cracking; occasioned by the effect of the inflammation of yesterday and the day before, which Mr. Hagyard had judiciously removed by a cathartic; as the symptoms were evidently the effect of loaded bowels, produced by the change of diet, and not the consequences of debility. The wine and porter having been discontinued for these two days, the last was again ordered, and a warm spirituous lotion applied through the roller. 10.—The limb much improved. 14.—The wound cicatrizing fast; several small sinuses broke out on the leg;

but, to my great satisfaction, on elevating the limb, it felt like a solid bone, without trembling in the centre as formerly. We began now to strap it with the Emplastrum Plumbi, spread on linen, from the ankle to the knee.

May 1.—The sinuses diminished; the space between the bones filled up with solid matter; by compressing it on each side I could trace a continued line of bone. The wound being a little fungoid, lunar caustic was applied at each dressing. The limb seemed to have a tendency to sink in the centre, which was prevented as much as possible, by compresses placed underneath. As nothing but time seemed now to be wanting, I discontinued my visits till the second of July, when I found the wound completely healed, and the limb firm. He was ordered to endeavour gradually to walk upon it. On the 26th of October I made a journey to Hunmanby, when, to my great pleasure, I met the boy in the streets, looking remarkably fat and well, able to walk without crutches, with his limb only an inch shorter than the other. I have been the more minute in this case, as I am persuaded the success has been, in a great measure, owing to the varied attentions which have been paid to the circumstances detailed. The portions of the tibia which have been removed are transmitted to the Society, for the inspection of its members; when it will be readily seen that in

a boy of our patient's years, they form one fourth of the length of the bone in its natural state.

In the variety and extent of surgical writings now existing, it is much to be lamented that no elaborate treatise has yet appeared on the management of compound fractures. The finished productions of Sir A. Cooper, and Mr. Lawrence, on Ruptures; and the valuable Essays of the former on Compound Dislocations, form so complete a history of these subjects, that the operations for herniæ are become quite familiar to country surgeons; and I have no doubt that the treatment of compound dislocations will soon be equally decisive. But there are so many interesting cases of fracture, upon which no volume can satisfy the surgeon, and so many circumstances to take into consideration, as to the propriety of the preservation and removal of the limb, that nothing but a large collection of facts can ever establish our practice in these common misfortunes of mankind. The practice of a large hospital may afford its fortunate superintendant some clear rules of action which do not fall to the ordinary lot of surgeons; but with him they rest, and are known no farther. When a man refers to authors, (and how many must he carry about with him, if from home!) besides having to pore over various works for the physiology of the bone, and but few containing what will satisfy him for practical purposes, he must have to

search through others for rules of surgical management, most of which are founded on such sweeping principles, and so little illustrated with cases or experiments, that he is bewildered, and even better without them as they at present exist. Thus, for instance, in the case above cited, Mr. Pott would teach the propriety of removing the limb; some surgeons would advise it directly, and others after trying in vain to preserve it. Mr. John Bell recommends the bringing the parts together, bruised and mutilated as they are, and says they will unite. Mr. Charles Bell very candidly gives a detail of melancholy facts, which although not so expressed by him, are at direct variance with his brother's recommendations *. I am not aware that any experiments have been made to ascertain to what extent of denudation of periosteum, a fractured bone may be capable of uniting by means of its own vessels. I should be inclined to believe that a bone so extensively deprived of all covering and attachment, must be subject to very considerable exfoliations, and perhaps necrosis, which would necessarily prevent osseous union; and, to say the least of it, subject the patient to a long and painful confinement, profuse suppuration, great bodily debility, and even in the end terminate in death, or loss of the member. Dr. J. Thompson's "Observations made in the British Hospitals in Belgium," seem fully to confirm this remark.

* Surgical Observations, Vol. I. page 314, &c.

But one great question is, if the denuded bone be removed to the extent of three inches, will the extremities so far detached from each other ever reunite; and will the leg be afterwards strong enough to support the body in the ordinary pursuits of life? Here Sir A. Cooper's high authority seemed to leave no hope, for we could not put the ends of the bones in contact, or nearer than about two inches of each other, in consequence of the pointed ends of the fibula projecting against the soft parts at every attempt to shorten the limb*. These spiculæ could only be removed by another wound, and perhaps danger to the peronæal artery, which would have rendered the case still more formidable. Hence no rule of practice could be drawn, as a material difference exists between the amputation of a large portion of the humerus or of the

* Surgical Essays, Part II. pag. 30. "The first reason which I should state," (says Sir A. Cooper,) for the want of union in fractures of the neck of the thigh-bone, "is the want of proper apposition of the bones; for if the broken extremities be in any part of the body kept asunder, ossific union is prevented." This opinion is supported by the Baron Larrey. A case is then related of a fracture of the tibia; and another from Mr. Smith of Bristol, of a piece of the tibia sawn off, together with some experiments on the radius and os calcis of rabbits, in confirmation of these remarks.

A similar fact is recorded by Mr. Thomas Sandwith, in his Cases of Surgery, annexed to his brother's works on the Bridlington Epidemic. Might not these instances have occurred, as we sometimes observe them, in particular habits, even when the bones are in coaptation? or they might have been disturbed during the treatment, as would be most probably the case with the rabbits.

femor, or of the head of a bone; for the divided ends could be brought in contact, or the upper portion of bone, in a joint operation, might still answer its purpose, though imperfectly. Besides, the arm has afterwards no weight to sustain beyond the inclination of the subject. But with respect to the leg, it was necessary that it should be again enabled to support the whole column of the body. Such were the embarrassments that affected our deliberations, and whether the plan adopted should be a guide to future cases, I will not pretend to say; but since the patient got well without any difficulty, even without pain, and as little deformity as is usual in a common fracture, surely the fact must preponderate a great way over speculative opinion.

I am informed that amputations of the angular portions of fractured bones are not uncommon at the Leeds infirmary. Whether it has been attempted under such circumstances, and to such an extent as has been already detailed, I am not aware; as important facts are too frequently buried within the walls of an hospital. I must acknowledge, however, that on speaking to the venerable Mr. Hey, on the bad consequences of compound fractures in London, he assured me that he was persuaded it was not so much from the foul air, as from not removing the sharp ends of bone, which irritated the muscles, and became a constant source of tetanus, or of those extensive suppurations so

often followed by death. He told me, by adopting this plan, his practice was very successful.

The following case becomes interesting from its occurring at nearly the same time, so that we had both of them under our care at once; the boy being of like station and similar period of life, with other circumstances of resemblance. But in this instance the bones could be made to approximate, so that it will shew what difference in time, trouble, pain, and success, proceeded from this circumstance; and it will also prove how simple the treatment of compound fractures becomes, when deprived of those incessant sources of irritation arising from the spiculæ of the fractured bone. The little advantage in time was, as might be expected, in favour of the latter and less serious case; but I believe the other boy suffered less from pain, and has now as good a leg.

March 28, 1821.—2 P. M. Johnson Turton, aged sixteen, was at work in the ship-yard of Messrs. Tindell's, when a plank of wood, eighteen feet in length, five in breadth, and half a foot in thickness, was thrown from the ship, which struck the middle of his leg, in attempting to avoid it. When Mr. Travis and myself arrived, we found him on a squab, the wound bleeding a little, and the foot turned inwards. His stocking was now removed, his trowsers cut off, the wound washed and examined, and a loose portion of bone taken

away with the fingers. Both the tibia and fibula were fractured; the ends of the former protruded from a very long wound, above half the length of his leg, which had the appearance of a clean cut. The ends of the bone were very ragged; the most forcible extension could not place them in coaptation. We, therefore, determined to saw off their extremities, with the common amputating saw. The upper portion, as in the former case, was removed first, a steel spatula being placed underneath, and a linen retractor round the bone, to defend the muscles; but the latter was so inconvenient that I threw it away, and depended on our hands. As the lower portion of bone was connected posteriorly with the muscles, the saw was withdrawn when it had gone nearly through, and the operation was completed with the bone forceps. No hæmorrhage followed, of any consequence; the wound was cleaned, the bones put in apposition. About half an inch of the exterior part of the tibia was left denuded of its periosteum, which was considered of no importance, as the rest of its circumference was connected with living parts. The edges of the wound were brought as near together as we could, and retained with three stitches, adhesive straps, and an eighteen tailed bandage. The limb appeared to be very straight, splints were applied, and it was placed on a pillow in the extended position. The boy complained as little as the other during the operation.

8 P. M. Pulse soft, no sickness, feels uneasy from the hardness of the squab, from which we did not think it proper to remove him; but we relieved him by placing a bed upon it.—29th, Passed an uneasy night, pulse but little accelerated, tongue rather dry, skin and face warm but not hot; he took some jalap with infus. sennæ tam. which occasioned three motions. In the evening, the face being flushed, it was sponged with cold water; the bandages were kept cool with the same; he feels pain in the wound, which makes him restless. ℞ Tinct. opii gtt. xv. in a saline draught at bed time; tongue dry and crusted; the saline mixture ordered, and he is to suck many oranges.—30th, Complained of his *jaw* at night; by mistake he had omitted taking his night draught; the limb was swelled, the pulse calm.—31st. Took the draught; had a better night; all the symptoms favourable.

April 2.—The dressings at the lower part of the leg were released with scissors, some discharge oozed underneath.—3d. The limb dressed for the first time, the wound assumed a fine healthy aspect; nearly two inches of the upper part appeared to be almost healed, only seeming to want the cuticle.—4th. Much relieved by being dressed, passed a good night, pulse soft; to take his ordinary diet, with half a pint of beer per diem.—5th. Complained of pain on dressing, stitches released, the upper part of the wound, which ap-

peared nearly united, again broke out, and the edges are receding. The edges were much inflamed, and injured by the stitches. A medical friend fancied the appearance of his limb so formidable, and the case likely to be so troublesome, that he said he would have removed the limb at first. But the pain and inflamed edges seemed to me to have been only the effect of the undue tightness of the suture, arising from the endeavour to bring the edges in contact.—9th. There seemed to be a sinus running from the fibula; we began to strap the whole limb with diachylon plaister on linen. The wound did not require dressing again till the 12th, when it looked much better, with the edges cicatrizing; discharge from the sinus considerably less, although at the first it did exceed a table spoonful at a dressing.—17th. Of late so much better that he is only dressed once a week; the wound much cicatrized; the limb seems to be beginning to unite, and to acquire firmness; he is very easy.

From this period the limb advanced rapidly to a firm union. But in July, although he walked about with crutches, an ulcer remained opposite the part of the tibia where the membrane was denuded, which seemed to indicate slight exfoliation; but, after poulticing, followed by adhesive straps, it compleatly healed. At the beginning of August he laid aside his crutches, and in September I saw him following his usual work in the

ship-yard. Much pain might have been saved to this patient by the simple use of straps, instead of stitches; although the wound had so much the appearance of a cut, and the suture is so strongly recommended by the late Mr. Hey, in his "Practical Observations," I think it right never to make use of them in a similar case again.

Case of Amputation of a projecting Edge of the Tibia, after the Union of a Simple Fracture.

Thomas Solliff, aged 30, a man of irregular habits, had fractured both bones of his leg, on May 18, 1821. They united in the ordinary period; but, from his want of steadiness, the bones were not in exact apposition; the sharp edge of the tibia projected against the skin so as to occasion much pain, some deformity, and considerable difficulty in setting his foot on the ground. The skin was inflamed, and would soon have ulcerated. I accordingly, with the assistance of my colleague, (26th of June,) made a semilunar incision of the integuments, reflected them backwards, and with Hey's saw amputated the sharp angle of the bone. I did not remove a great deal, as I found Hey's saw a much inferior instrument to the common or metacarpal one. The vena saphæna major, which passed directly over the part, would have bled freely, but it was easily stopped

by pressure. The skin being replaced over the wound, it was completely healed in four days. His leg looked much straighter, and in September I met him walking very well, in the pursuit of his ordinary business.

In concluding this paper I must beg to make my acknowledgments to Mr. Haggard, for his unremitting attention to the first case; and to my partner, Mr. Travis, for his ready concurrence and zealous co-operation in all.

A CASE

OF

UMBILICAL HÆMORRHAGE,

WHICH TERMINATED FATALLY.

By G. POUT, Esq.

COMMUNICATED BY

Sir ASTLEY COOPER, Bart.

Read May 22, 1832.

On the 4th of September last, I was sent for early in the morning, by a lady of the name of White, requesting my immediate attendance, as her child had been bleeding all night from the navel. On my arrival, I found, from the state of the linen, that the hæmorrhage must have been very considerable, and I endeavoured to ascertain the cause by introducing a pair of dressing forceps within the navel, as far as possible, and then opening them to stretch the integuments; but not being able to see from whence the blood came, I plugged up the opening with lint, &c., and used pressure by means of adhesive plaister and a roller. The child was then laid on a firm cushion on its back, with a view of making the abdominal muscles as tense as possible; and, after waiting an hour or

two, I found the linen again imbued with blood. I made several attempts to ascertain the cause, but to no purpose. I therefore made pressure as before, and, as I thought, successfully; for after waiting some time longer, and not perceiving any bleeding, I had every reason to believe it was stopped. The child was again laid on the cushion, with strict injunctions not to move it all night. When I called on the following morning, I was informed that the child had been dead several hours, having bled to death, as the linen clearly proved. This was a fine healthy male child, about ten days old. The funis came off as usual, and without the least appearance of any thing more than common on the 6th day. The bleeding commenced on the 8th, and continued till death, which happened about twenty-seven hours after. What renders this case most remarkable is, that this lady has lost two children before, under exactly similar circumstances, previous to her coming into this neighbourhood; and has three fine children living.

Upon dissection after death, by the request of the parents, (whose good sense cannot be too much applauded, and to whom I feel much indebted,) I found the umbilical vein full of blood, in a fluid state, and nearly as large as a goose quill. Both the umbilical arteries were sufficiently pervious to admit a probe; and the left still containing a plug of coagulated blood, from which, it would seem, the bleeding took place. They were both so much

retracted within the integuments, that it must have been impossible to have stopped the bleeding by pressure. If ever another case of the kind were to come under my care, I should not hesitate to cut down upon the arteries, and to tie them, as the only means of security.

Market Street, Bedfordshire,
May 24th, 1822.

CASE

OF

VACCINE DISEASE AND MEASLES,

EXISTING

AT THE SAME TIME IN THE SAME INDIVIDUAL.

By S. GILDER, Esq.

ASSISTANT SURGEON TO THE COLDSTREAM GUARDS.

COMMUNICATED

By Mr. HUNTER.

Read April 30, 1822.

A FEMALE infant was vaccinated by me with two punctures in each arm, from a very healthy child fourteen months old, on the 27th of December, 1821. On the following day, the brother of the infant had a distinct eruption of measles, which covered the whole body, and exhibited a most perfect case of rubeola vulgaris. On the 30th of December, the infant vaccinated on the 27th, was seized also with symptoms of measles, which increased on the second day; and on the third, the eruption of measles was general, resembling, in its appearance, that of the child first attacked. A third and a fourth child successively became infected; in them also the disease went through its na-

tural progress. Dec. 31st, the fourth day from that on which the infant was vaccinated, the usual appearance was exhibited in both arms. Jan. 3d, the eighth day, a considerable accumulation of lymph had taken place in the four vesicles; the areola of which were not so distinct as they ordinarily are in consequence of the more prevailing and darker eruption of the measles, which disease had continued with regularity and severity. With matter procured from one of the vesicles, I vaccinated on this day (the 8th) another healthy child, aged two months, in an opposite part of the town, with a single puncture in each arm; that in the left only succeeded, and its progress was perfect.

On Jan. 6th, the eruption of the measles had quite faded, the four vesicles were large and perfect.

During its illness, the infant had much cough and difficulty of breathing. I applied four leeches to the chest, which bled very profusely; the child in consequence became extremely debilitated; with the assistance, however, of mild nourishing diet, it had, by the 10th, gradually recovered from the effects of the depletion. At this period, the vesicles had not dried, not having been exposed to the air. On the 15th, the infant, in all respects, surpassed my most sanguine expectations in her recovery. Perfect scabs came away from both arms, and are now in my possession, as well as one from the child of two months old, which had been vaccinated from it.

The foregoing statement will, I presume, go to prove that two hitherto accounted distinct diseases may exist and proceed uninterruptedly in the same constitution at the same time, without any apparent deviation from the regularity which each disease would exhibit per se. Such an assertion certainly, in a great degree, tends to subvert the theory of John Hunter, who says, in his 'Animal Economy,' "It may be admitted as an axiom that two processes cannot go on at the same time in the same part of any substance." This observation, however, is somewhat foreign to the present question; but he again says, in his 'Treatise on the Blood,' &c., "As I reckon every operation in the body, an action, whether universal or partial, it appears to me, beyond a doubt, that no two actions can take place in the same constitution, nor in the same part at one and the same time." He adds, "for instance, a person is innoculated, and the puncture does not inflame for fourteen days, cases of which I have seen; is not this deviation from the natural progress of the disease to be attributed to another disease in the constitution at the time of innoculation?" He then relates a case where the usual progress of innoculation performed by himself, was suspended, in consequence of the appearance of the measles; on the disappearance of which last complaint, the small-pox again came forward, went through its usual course, and terminated favourably: see page 9, Vol. I. Treatise on the Blood. Now this is a case in point, and differ-

ing only from mine, in this being cow-pox and that small-pox; in what this distinction consists in so far as the constitution is concerned in regard to its capacity for receiving the infection of the matter of the cow-pox, and not of the small-pox, whilst evidently labouring under a specific disease, is a question I shall leave for more able reasoners to discuss. All that I wish to shew is, that the patient in question was without a doubt under the immediate influence of the infectious effluvia of the measles when it was vaccinated; that this general derangement of the system did not incapacitate the vaccine virus taking effect, and proceeding with all due regularity, appears most evident by the lymph taken on the eighth day, during the time that the eruption of measles was apparent, having been inserted into the arm of another infant, and producing the regular appearances and stages of vaccination.

CASES

OF

UNUNITED FRACTURE

OF THE

HUMERUS,

TREATED BY SETON AND THE APPLICATION OF CAUSTIC POTASH.

By HENRY EARLE, Esq. F.R.S.

ASSISTANT SURGEON TO ST. BARTHOLOMEW'S, AND SURGEON TO THE FOUNDLING HOSPITAL.

Read April 2, 1822.

IT frequently happens that medical records contain only the successful results of any particular practice or operations, while the less fortunate cases are either wholly suppressed, or but slightly mentioned. This is much to be regretted in the cultivation of a science founded on fact and observation, whose ultimate object should be truth, and the alleviation of human misery. Being firmly persuaded that a faithful narrative of unsuccessful cases would often be most instructive, I have ventured to put together the following facts:—

Mr. C. of Teignmouth, fell from his horse in August 1820, and fractured his left humerus, near the insertion of the deltoid muscle. He felt very little pain at the moment of the accident, and

none at all after the limb had been placed in splints. Nothing worthy of remark occurred during the early treatment of the case; but, at the usual period, on the removal of the splints, it was found that no union had taken place. After a lapse of some months he consulted an eminent surgeon at Exeter, who wished him to submit to an operation, with a view to excite ossific inflammation. This, however, he declined; and the following May he came up to London, and placed himself under my care. His age was about thirty, and he stated that he had generally enjoyed good health. In his infancy he had suffered from fits, which had caused a paralytic state of the right arm, which was wasted, and nearly useless. This circumstance rendered it more important to endeavour to restore the left, which had been fractured. On examining it, I found the broken ends perfectly moveable, one upon the other, and the superior portion was drawn in towards the axilla, and did not appear in close coaptation with the inferior. While I was examining him, I was surprised to find that the integuments of the arm and fore-arm, in the space of a few minutes, became covered with urticaria. On remarking this to him, he stated, that he had been subject to this affection for many years; that he never suffered in his health from it; and that the slightest irritation, and even the friction of his clothes, would at any time produce it. This led me to be very particular in my enquiry into the state of his general health, and

his various secretions. He had an unhealthy sallow aspect, he perspired profusely, and his perspiration had a peculiar fœtid smell, and stained his linen of a brownish tint. His appetite was good, and he slept well; but his bowels were very irritable. Fermented liquors, such as beer and cyder, or any irregularity of diet, produced a copious deposit of lithate of ammonia in his urine; although he was not sensible of any dyspeptic feelings, and conceived himself in health. His common beverage was cyder. I recommended him to have a seton passed through the arm, between the ends of the bone; which, on a revision of all the circumstances of the case, I was led to hope might be attended with success. I further recommended him to take the opinion of Mr. Brodie, who concurred with me in the propriety of the measure.

On the 16th of June, the operation was performed. An incision was made down to the bone, along the outer edge of the biceps, when I found that the fracture had been oblique, and that there was a projecting point occupying the outer part of the inferior portion; behind this I passed the needle, directing it through the interval between the ends of the bone. There was but little resistance to its progress. Considerable inflammation and a copious discharge of offensive matter followed; and, for some days, there was a good deal of fever and constitutional disturbance. The soft parts around the fracture became much thick-

ened, and some hopes of union were entertained from this circumstance. After a time, however, this thickening subsided, leaving the limb quite as moveable as before the operation. The discharge became thin and ichorous, and excoriated the surrounding skin. The greatest attention was paid to maintain the ends steadily in contact, and his diet and general health were strictly regulated during the whole treatment of the case. At the end of seven weeks the seton was withdrawn, having totally failed in producing any bony deposit, though it had certainly caused considerable inflammation in the soft parts immediately around the bone. On mentioning the case to some medical friends, and considering with them the propriety of any further attempts to produce the union, Mr. Green suggested an operation which he had seen successfully practised by the late Mr. Henry Cline, which consisted of applying caustic potash to the ends of the bone. On considering the subject, the practice appeared to afford some probability of success in the present case; and the age of the patient and the useless state of his other arm, fully warranted any attempt. The nature of the operation, and the possibility of its failure, were fairly represented to him, and on the 2nd of August he submitted to the trial, on which occasion I was favoured with the assistance of Mr. Green.

An incision, about four inches in length, was

made through the integuments, over the broken part, the broken ends of the bone were laid bare, and were found to be separated by a small detached portion of bone and a fibro-cartilaginous deposit. A small quantity of pus was still in the tract of the seton. The intervening substance was freely removed with a scalpel, but owing to the irregular surface of the bone it could not be entirely separated. A stick of caustic potash was then rubbed upon the ends of the bone until the whole appeared black. I was in hopes, by thus producing artificial necrosis, to call forth into action the ossifying powers of the surrounding bone and periosteum. In performing the operation much caution was required, as the upper portion of the bone lay close to the humeral artery. This rendered the operation rather more tedious, but the patient endured it with much fortitude, and afterwards declared that he would rather submit to a repetition of it, than have another seton passed. Very little constitutional irritation followed, and no more inflammation in the part than was desirable. Considerable thickening took place round the bone, and the patient expressed a consciousness of returning strength and power in the limb. The sloughs of the softer parts came away in about a week, and two trifling exfoliations at the end of about six weeks. The wound granulated kindly, and was only kept from closing by the exfoliations. While there was a very free discharge from the wound the disposition to urticaria

ceased, but it returned as soon as the wound was healed. The thickening round the fracture had a very firm feel, and bore all the character of a callus. The consciousness of returning strength, and the increased firmness of the limb, were very encouraging, and induced Mr. Brodie, Mr. Green, and myself, to entertain very sanguine hopes of success. In the beginning of October I constructed an apparatus, calculated to give very firm and steady support to the limb, which was applied before he left town, at which time there was only a very slight degree of yielding, in one direction, towards the wound. I recommended him to be very careful, and to continue to wear the apparatus for some time. I have since had the mortification to hear from him, stating that he continued to wear the apparatus until Christmas, and on leaving it off, he found that the whole of the callus had been absorbed, and the limb was as weak and useless as before.

On reflecting on this case, the following question suggests itself:—Did the want of union depend on any peculiarity of constitution in the individual, arising from causes over which we have no controul? All the circumstances of the case seem to favour such an opinion. In the first place, although the ends of the bone were not in very close adaptation, and a small piece of detached bone was interposed, the space between them was not sufficient to prevent union in a healthy person, and

the separate portion of bone was not deprived of vitality. Next, although he was certainly not in a good state of health; yet, any flesh wounds which he had met with accidentally, and those which were inflicted in the operations, healed without difficulty; which proves that his vital powers were sufficiently active; of which, indeed, the state of his pulse, his time of life, and his power of enduring fatigue, afforded satisfactory evidence. It was clearly then not from debility that the bones would not unite. How far it may have been connected with the state of his skin, and digestive organs, must be determined by further experience. Another question suggests itself, which may be worth mentioning. Would it have been better to have left off the support earlier? To employ the language of Hunter, would the stimulus of necessity have called forth greater activity, which was not roused so long as the artificial support was employed? It is impossible to answer this question confidently; but I may briefly mention a fact which I have met with in practice, and which rather favours such an opinion.

A gentleman was riding along the streets at a brisk pace, when his horse's legs slipped, and he fell with much force on his side. The gentleman's leg was under the horse at the time, and was very severely bruised, and both bones were broken. The fracture of the tibia was very oblique, extending two inches and a half, and terminating in a very

sharp portion, which nearly came through the skin; there was very extensive echymosis; and on the third day large vesications formed all over the leg, which threatened sphacelation. By great care these vesications were prevented from breaking, and no ulceration or sloughing took place. At the end of five weeks the limb felt strong, but I could still distinctly trace an interval of about two lines in breadth, along the front edge of the fracture, which appeared to be filled with fluid blood, as an evident impulse was felt below, when the upper part was slightly struck with the finger, and an undulation could be distinctly seen. As it was impossible to say to what depth this extended, I was at first unwilling to allow him to bear any weight upon it; but permitted him to move it about in bed. At the end of nine weeks, finding no improvement, I made him a pasteboard splint to envelope the limb, and encouraged him to walk about with crutches. In a short time after this the fluid was absorbed, and bony union took place.

Previously to my hearing the unfavourable result of Mr. C.'s case, and while flattering myself with the expectation of its successful termination, I had an opportunity of making another trial of the operation under the following circumstances:—

M. Parker cohabited with a man for five years,

who, during the whole of this time, was suffering from disease in his bones, supposed to be the consequence of syphilis; for the cure of which he was treated with large quantities of mercury, by the late Sir C. Blicke, under whose care he died, in St. Bartholomew's hospital, having lost his palate and the bones of his nose; and having suffered from affections of most of the other bones in his body. During the period of their connection she bore one child, who died at the age of sixteen months; and, according to the opinion of Sir C. Blicke, the bones of the arm were diseased. Some time after this, she became affected in the pericranium, and an abcess formed between the left eye and the orbital plate; about the same time her left clavicle and right humerus became very painful. She never, however, suffered from any primary syphilitic affection whatever. Sir C. B. thought proper to subject her to a course of mercury, and afterwards sent her to the sea-side. In the year 1811, while she was at Brighton, recovering from the effect of the salivation, when she was in the act of raising a tea-pot, her humerus gave way, about three inches above the elbow. She suffered very little pain from it, and it was very properly treated by a surgeon resident at Brighton, and she was occasionally seen by Sir C. B., but no union of the bone took place. From this time she was constantly suffering in her health, and her other limbs became affected. She was several

times subjected to severe courses of mercury, in St. Bartholomew's hospital, in the Middlesex hospital, and in private; but these rather aggravated than alleviated her sufferings.

In September, 1820, she placed herself under my care, at which time nearly all the cylindrical bones in her body were diseased, there being apparently great ossific deposit, with extreme tenderness and inflammation in the periosteum. Her general health was very bad, and was much impaired by the constant severe pain which she endured, and which deprived her of rest at night. The broken arm was less swollen and painful than any other part, and the fractured bone was very loose, in consequence of the free use she had been obliged to make of the arm in working at her needle. It was bent nearly to a right angle whenever the biceps muscle contracted, and at times she suffered much from the compression of the ulnar nerve. She was put on a course of a strong decoction of sarsaparilla, with very subdivided doses of the oxymuriate of mercury; an issue was made in the leg, which afforded so much relief that she subsequently had issues in her thighs and arms, and always with great benefit. Under this plan of treatment, and great attention to diet, her health gradually improved. She lost the pains in the bones, the thickening of the periosteum subsided, and she gained flesh rapidly. She remained

under this treatment nine months, and quitted the hospital in May, 1821, in better health than she had enjoyed for many years. About two months before she quitted the hospital she had a severe attack of pleurisy, which required very active depletion; but this did not at all affect her recovery from the affection of the bones. She has since remained under my occasional observation, and has not suffered any relapse, being at the present time in perfect health. As she was very anxious to recover the use of her arm, and as all diseased action appeared to have ceased, I thought it worth her while to submit to an operation similar to the one practised in the former case. At the same time I did not feel at all sanguine of success. On cutting down on the outside of the arm, the upper portion of the bone was found remarkably small, and there was a very considerable interval existing between it and the lower portion, the surface of which, being very near the joint, was much broader, and did not at all correspond to the upper one. More than an inch of bone appeared to have been absorbed. Her arm was so fat that the depth of the wound was considerable, and in consequence of the important parts in the immediate vicinity, much caution was required in the operation; the intervening peculiar texture was removed, and the two surfaces were pared with a strong knife, after which the potash was applied as freely as was deemed safe, and apparently both surfaces were blackened

and destroyed. The limb was much straighter after the operation, and the next day it could be extended to its proper length.

I constructed a splint which secured both upper and lower arm firmly to the side of the body; this was made to open at the side, opposite to the wound, with a hinge, which enabled me to dress it without moving the limb. She suffered no pain after the operation, and her general health was undisturbed by it. The wound granulated very kindly, and healed without any exfoliations coming away. The limb was retained ten weeks in this position, at the end of which time it was ascertained that not the slightest degree of reparation had taken place; there being no swelling or deposit at the ends of the bone, and the arm being as flexible as before the operation.

At first I was induced to think that the failure in this case was, in some measure, owing to the great interval which existed between the bones, and that, if they had been kept more closely in contact, the result might have been more favourable; but of this I much doubt, on further reflection, as there does not appear to have been the least effort at reparation.

The operation which was performed in the above cases, has not, I believe, been yet laid before the public. Although, in these instances, the

practice was not crowned with success, I do not consider that the failure can be attributed to the operation, or that it at all militates against the propriety of adopting it in other cases.

In both these instances there were sufficient circumstances connected with the state of the patients' constitution, to account for the want of success: in the former case the seton was tried and it had failed, and temporary benefit was obtained from the second operation. In neither case did the operation at all affect the general health; nor was it so severe as the patients expected; and certainly it was less so than the employment of the seton.

CASE

OF A

LARGE NÆVUS MATERNUS ON THE HEAD,

CURED BY TYING THE CAROTID ARTERY,

COMMUNICATED BY

J. WARDROP, Esq.

SURGEON EXTRAORDINARY TO THE KING.

Read April 30, 1822.

IN a paper which was published in the ninth volume of the Transactions of this Society, entitled "Observations on one species of Nævus Maternus," I related the case of an infant, born with an enormous tumor of this description, where I attempted to save the life of the child, by tying the common trunk of the carotid artery.

From the history of that case, it appeared, that not only so large an artery could be safely tied in so young a subject, but the effects of the operation proved, that the measure might, in all probability, be successfully resorted to, for the relief of this formidable disease, when under more favorable circumstances.

A most excellent illustration of the effects of

this practice, appears in the following case, which I now have the honour to communicate to the Society, from Doctor Arenat, of St. Petersburgh; and its value seems to be very considerable, as it proves in the most satisfactory manner, how nævi of that bulk, the removal of which by extirpation would inevitably be followed by a fatal hæmorrhage, may be successfully treated, by previously tying the arterial trunk, by which such tumors are supplied.

A man who had from his birth, several nævi on different parts of his body, received a blow on one of them situated on the right temple. It increased rapidly in size, acquiring a prodigious bulk in the space of two hours after the injury. The carotid artery was tied an inch and a half above the clavicle, and two ligatures were placed round it, half an inch distant from each other. The tumor burst during the operation, and the loss of blood was calculated at not less than eight pounds.

On the day following, the tumor was found entirely emptied of blood. A great portion of the skin was now cut away, and about twelve small arteries secured. The ligatures on the carotid artery were removed on the seventeenth day, and the wounds healed rapidly afterwards.

CASE

OF

A WOUNDED NERVE OF THE THUMB,

FOLLOWED BY

SEVERE SYMPTOMS, WHICH WERE RELIEVED BY A DIVISION OF THE NERVE.

By J. WARDROP, Esq.

SURGEON EXTRAORDINARY TO THE KING.

Read May 14, 1822.

ON a former occasion, I had the honor of laying before this Society, the account of a case, where some severe nervous symptoms which arose from the prick of a thorn, on the point of the finger, were instantly and permanently relieved by amputation *. I have now to relate the history of a case in many respects similar, and as the operation which was performed in this instance, has not, as far as I know, been usually adopted, though frequently proposed, I hope the following statement will not be deemed uninteresting to the Society.

A young gentleman received a cut with a gun-flint obliquely across the radial side of the distal phalanx of the left thumb. The wound was about

two thirds of an inch in length, and so deep as to divide the digital artery. Though accompanied with an unusual degree of pain, it readily healed hesion, and being considered of little impor- rther notice was taken of it. The pa- er, returning to his usual habits, and fully, in a few days the thumb became the uneasy feelings, accompanied by tation, had greatly increased when n, which was on the tenth day after nt. No change could then be perceived earance of the thumb, and the cicatrix rfectly natural, notwithstanding he com- great pain not only in the wounded t also in the fore finger and radial side of ger, which extended up the arm, and as far as the neck and side. The pain was constant, and when the wounded thumb was even slightly touched, it became excessively severe. The pulse was frequent and tense, the face flushed, and the tongue white and frothy. A very copious general bleeding gave almost immediate relief; the pain in the arm and back decreasing, and the thumb becoming less painful to the touch. For three successive days all the local symptoms recurred, but yielded each time to a repetition of the bleeding, along with copious purging, and a strict antiphlogistic regimen.

He afterwards continued to suffer, sometimes very severely, whilst at other times he was com-

paratively easy, and his pulse, though frequently agitated, never became full or hard, so as to point out the necessity of further depletion. The paroxysms of pain, were several times distinctly produced from mental excitement, and on some occasions were brought on by taking even a very small portion of animal food. Opiates gave little relief, and nothing seemed essentially useful, but strong purgatives, and living on the most simple liquid food.

In this manner did the symptoms go on for ten days; three weeks having now elapsed since the accident. By this time he was considerably reduced in flesh and strength, and the *primæ viæ*, whose functions had long been deranged, previous to the accident, were now difficult to regulate. The wounded thumb, which was at all times painful, and extremely tender to the slightest touch, was sometimes seized with paroxysms of agonizing pain, which was now no longer confined to those fingers supplied by the radial nerve, but extended over the whole hand, arm, neck, and even down the back.

In this alarming state, the trial of some further means of relief seemed imperative. The good effects of amputating the finger in the case formerly alluded to, might have led me to adopt a similar practice in this instance, had not the appearance of the wound, and the division of the digital artery, distinctly pointed out the particular nerve which had been injured, and from which injury there

could not be a doubt but all the severe symptoms had arisen. I therefore thought it advisable to make a complete division of the nerve above the injured part, and with the concurrence of Mr. Cline, the operation was immediately performed, by making a deep transverse incision close to the second point.

The operation was instantly followed by a complete abatement of all the symptoms; for the thumb which he could not allow to be touched a minute before, he could now roughly handle, and all pain left the other fingers and hand.

The symptoms, however, did not remain permanently subdued; for during several weeks after the operation, whenever he took food of difficult digestion, when purgatives did not readily operate, or when his mind was any how excited, the pain attacked his hand and arm, and sometimes to a very considerable degree. After that time his health became quite re-established, and twenty months have now elapsed since the operation, during which time he has been able to take the most violent exercise in shooting and hunting. The point of the thumb has always remained numb, though not painful to the touch; and what strongly points out the sympathy which sometimes an injured part long preserves with the digestive organs, is, that when from any cause, this gentleman's stomach is disordered, he feels a pain in the injured thumb.

OBSERVATIONS.

Other cases which illustrated the remarkable effects of injuries of nerves, also pointed out to me the good result which might reasonably be expected from an operation such as was had recourse to in the case now related; whilst every day's experience showed, with what safety even the larger nervous trunks might be cut through.

A child received a punctured wound on the forehead, with the point of a knife, which was followed by convulsive twitchings of the upper eye-lid; but all these symptoms ceased whenever Portal made the puncture into an incision. It has sometimes happened, that in the simple operation of phlebotomy, a twig of the muscular cutaneous nerve has been pricked, and followed by very painful symptoms, all which have immediately subsided whenever the puncture was extended into an incision. The same curious phenomena were exemplified in a young gentleman, who soon after having received a wound on the forehead, saw double, the eye of the injured side being turned outwards. In order to remove a portion of carious frontal bone, three months after this accident, I made an incision across the forehead, which necessarily divided the left frontal nerve; and on removing the bandages, it was found that the eye-ball had resumed its natural position, and single vision was restored.

The effect of ligatures on nerves, also pointed out those striking peculiarities in their function and structure, already illustrated in the difference of the symptoms produced, either from a complete, or from a partial division of a trunk. The epileptic fit has, in many instances, been warded off, by tying a ligature round the finger, when the aura commenced; and there is a case well known to many in this metropolis, of a gentleman who bruised his thumb by a fall in hunting, and who was afterwards subject to severe nervous paroxysms that commenced in the thumb, and extended up the arm through the system, and which he could arrest by putting a ligature round the thumb, so that he was in the constant habit of carrying a tourniquet in his pocket, to apply whenever he knew of the approach of a fit.

All these facts, viewed collectively, show that the partial division of a nerve is often followed by the most serious mischief, whilst, that in order to subdue such symptoms, the complete division of the nerve above the injury may be adopted as a safe and effectual means of relief.

It ought also to be here observed, that cases do occur where it is not practicable to divide the injured nerve alone, and in such cases, when the wound is in an extremity, amputation of the whole member ought to be resorted to. Hence arose the necessity of removing the woman's finger, in the

case already alluded to, and hence also did Mr. Denmark judiciously have recourse to amputation of the arm, in the case of wounded radial nerve, recorded in Vol. IV. of the Transactions of this Society.

It ought further to be remarked, that the partial division of a nerve sometimes happens without being followed by any of the distressing symptoms which have been described; and the injuries where this takes place are distinctly marked by a loss of power in those parts supplied by the fibrillæ which have been divided, and by a subsequent wasting of the soft parts. An artillery officer received a wound on the upper and posterior part of the thigh, in the site of the sciatic nerve. He has since completely lost the power of his foot and lower part of the leg, both of which have been gradually wasting away, whilst all the upper part of the limb is perfectly natural. A young man received an injury on the spine, after which both testicles wasted away. This wasting of the soft parts after a wound, may, perhaps, be considered as a pathognomonic symptom of a nerve having been injured.

A series of observations on the varied effects of injuries, and on the various combinations of symptoms in the diseases of nerves, as well as in their symptomatic affections, might not only lead to important practicable results, but would, I am per-

suaded, ultimately afford a more satisfactory explanation of the functions of this part of the animal structure, than has hitherto been accomplished by the most enlightened physiologists. For what those actions are on the sentient extremities of a nerve, which produce sensation, and how the same action passes along their course to the sensorium, are questions still involved in the greatest obscurity.

ON THE

VARIETIES OF DISEASES

COMPREHENDED

UNDER THE NAME OF

CARCINOMA MAMMÆ.

By CHARLES BELL, Esq. F.R.S. Ed.

SURGEON TO THE MIDDLESEX HOSPITAL, AND LECTURER ON ANATOMY IN GREAT WINDMILL STREET.

Read May 28, 1822.

PART I.

THE diseases I am about to describe, do not make a silent and gradual progress, leaving the patients to deceive themselves with hope; the danger is impending and immediate, the appearance is striking and monstrous, and fills the mind with horror not to be concealed; the patient sinks gradually, she dies daily, and is conscious that she is dying.

My duty requiring me to visit regularly a numerous class of female patients suffering from cancer, I ought not to reserve my testimony to their conduct—how seldom the pressure of severe pain and the sure approach of death influence them to any expression of impatience or complaint; they

are, on the contrary, calm and placid, if not cheerful, giving an example of unostentatious resignation, and the blessed influence of religion—which witnessing, the mind naturally reverts to the boasted instances of philosophy in the other sex, which are as nothing in comparison.

The members of this Society will allow that I have other objects more agreeable to pursue, and more creditable if pursued successfully: they will therefore believe, that in bringing this painful subject before them, I am acting from a principle of duty.

Many hopeless cases of local disease, under the name of cancer, are sent into our wards; some of these are tractable, and can be cured; some of them are incurable, by our present means. We ought never to lose the hope of finding a remedy for these; but we have other objects not less important, and within our power of accomplishing. To alleviate pain, to prolong life, to make the disease bearable to the patient, and less a source of horror to friends, is within our power. To distinguish diseases of a different nature, to know when to extirpate with the knife, when to avoid the performance of severe but useless operations, are objects sufficiently important. How often is a simple tumor mistaken for a cancer; how often is a disease of mere irritation from neighbouring or remote sympathy, or even from motion of the part, mis-

taken for a formidable cancer! There are cases where we have it in our power to relieve the patient from an agony of mind worse than bodily suffering, and by distinguishing diseases to preserve them from being the dupes of quacks who ruin them. By much the larger portion of patients received into the cancer ward of the Middlesex Hospital, have spent their last penny, and, what is worse, they have lost that precious time in which they might have been cured, in attendance on a set of the most unfeeling wretches that ever disgraced a country. Indeed, the subject would be sufficiently important if we had no other object than to make those distinctions in the diseases called cancers, and to note those occasional variations in their progress, which afford to that class of persons the means of deceiving.

In treating of the varieties of disease which are called cancers of the breast, I shall first present a history of true carcinoma; I shall then give the character of other diseases, which differ in some circumstances, but which are of the same formidable nature; I shall then return to the consideration of the character and changes of the more common form of the disease, for the purpose of giving instances of the mistakes we are liable to in treating it, the changes to which it is subject, and through which deceits are practised on public credulity.

I. *Carcinoma mammæ.* We ought first to notice the effect of age on the whole class of carcinomatous tumors; for the same disease, recognisable by obvious signs, will run its course rapidly, and with every symptom aggravated, in a woman of forty-five, while it will remain stationary for years in a woman of sixty or seventy.

In an old woman, the carcinoma will present one or two small tumors exceedingly hard, and attached to, or incorporated with, the wasted mamma, and with the pectoral muscle. The skin over these tumors will become attached, the surface will become discoloured and livid, and will exhibit a great degree of venous vascularity.

These hard lumps will remain very long stationary, having a rosy surface slightly ulcerated. The ulceration will indeed sometimes close, and the tumor remain inactive, while a constitutional disease is making slow progress. The patient, excessively extenuated, will at last sink, from the continuance of a peculiar hectic, attended with pains in the lower part of the spine, hips, and shoulders.

II. The true carcinoma belongs to that term of life, when the uterine functions cease. It occurs in this manner:—The menstruation becomes irregular, both in respect to time and quantity.

There are long intervals, after which the discharge is profuse, with unusual disturbance of the general system. The mamma, in particular, sympathises with the condition of the uterus; pains strike through it, and it swells; the general fullness and tension subsiding, a more partial hardness is left, a "hard lump" is felt; it has irregular margins which mix with the substance of the breast. The hardness extends, until there is an unusual firmness over the whole gland; at the same time it becomes tuberculated, or knobby and irregular. The veins on the surface of the mamma, and in the surrounding skin, become more distinct and larger, and of a deeper blue colour. In the mean time, the patient's strength declines, and she visibly wastes in flesh.

A very important character is now exhibited in the change produced on the nipple. It is not only drawn in and incapable of erection, but it is retracted in comparison with the irregular convexity of the mamma. In a later stage, not merely the nipple but the skin is puckered and tucked in, and as if it were drawn into the vortex of disease. They now adhere firmly to the mass below, and sometimes there is bleeding from the nipple, which taken with the other circumstances is an unfavourable symptom. The glands of the axilla are early affected by the disease when the nipple bleeds.

III. A true carcinoma may begin very differently, and exhibit a different exterior character. A small hard tumor is felt deep seated in the mamma. It is difficult to distinguish whether or not it is a part of the proper gland. Its progress is generally this: it becomes painful, it draws nearer to the surface, it becomes attached to the mamma and to the skin, and is gradually incorporated with them. The skin becomes discoloured, the surface becomes moist, and the patient is alarmed lest a sore should break out.

It does ulcerate, and begins to discharge. The bottom of the sore is foul and sloughy, the smell is offensive, and the constitution sympathises with the state of the sore.

The whole gland is now hard, and adhering to the pectoral muscle. The edges of the sore are particularly hard, of a dark red, and have a glazed appearance. The edges have not risen with everted and curling margins: they are rather depressed under the general convexity of the tumor, and, as it were, condensed into a smaller volume. This will certainly be the appearance presented in a fat woman.

The ulcer is deep and foul; by pressing the tumor laterally it is opened, and the chasm is deep, like a wound with a knife, having solid,

abrupt, and sharp edges. In proportion to the depth of the ulcer, the surrounding hardness extends; and when the whole breast is taken betwixt the ends of the fingers, it feels of a stony hardness.

IV. The disease, although commencing in the mamma, will sometimes propagate itself, not so much by engaging the textures of the mammary gland, as by building up its peculiar structure in the cutaneous glandular texture. Tubercles will be felt in the skin around the nipple, and extending to the skin of the breast, neck, and shoulders. These tubercles become painful and are soon attached to the skin. They first assume a high red colour, then a yellowish transparency in the centre. This appearance might persuade us that they were about to break and suppurate, but they do not, nor do they change until they open into a corroding and wasting ulceration.

V. It is a form of the same disease when the breast presents a tumor elevated, tuberculated, and remarkably firm, having no elasticity, but being, on the contrary, fixed to the side and rocky, so as to present one consolidated mass. The surface is granular, and of a deep or rather dark red colour, with a bluish cast, and somewhat like the colour of a peach. This tumor ulcerates and sloughs, and bleeds profusely: yet the bleeding may be considered as an accidental circumstance, in as far

as it is a mere consequence of the sloughing. The disease is propagated by tubercles under the skin, towards the sternum and clavicles. Effusion into the chest is an early accompaniment of this form of disease.

It is necessary, before we proceed further, to consider the volume and form of the carcinomatous tumor.

One of the most learned surgeons of the present day says, that *tumor* is not an essential character of carcinoma. It is certainly true that there is not always an increase of the dimensions of the whole breast; on the contrary, the true carcinoma is often accompanied with a contraction and diminution of the general bulk. But what is true of the breast or mamma is not true of the *tumor*. For the proper structure of the gland either shrinks or is compressed; and sometimes the surrounding fat is diminished by absorption, so that the whole mass is less than the natural breast, or than what the breast was before the commencement of the disease. But still the diseased part is properly a tumor: there we undoubtedly see an increased mass, a preternatural growth, or new matter, corresponding to the old definition, "*morbosum augmentum.*" But further, and in respect to the adipose membrane, the fat is not always diminished in carcinoma mammæ, but sometimes quite the contrary. And this difference in it will

sometimes produce a variety in the external character, when there is none in the disease actually, or in the internal structure. Sometimes from the diminution of fat, the irregular tuberculated structure of this disease will be apparent to the eye and to the touch; while in another patient the breast will be large, full, and smooth, only marked more than naturally with large blue veins, and having an ulcer like a hole dug in the substance of the breast.

VI. *Impostumated Cancer.* Here let me notice a deceptious appearance in the progress of cancer. While the mamma is not yet ulcerated, it will swell and soften and point, and finally burst, with all the appearance of a scrofulous abscess. So that you are sustained with a hope, that the disease is of a less malignant character than you at first imagined. But presently there is disclosed a large chasm sloughy and foul. The parts around this chasm become harder and tuberculated, and the edges are everted. This is the true impostumated cancer.

VII. It is important to observe the variations in the aspect of cancer. The local disease makes its progress in two ways: 1. by *ulceration*, that is by absorption; 2. by *mortification*, and sloughing of successive portions. And accordingly the aspect of the sore varies in a very remarkable manner. To-day, the symptoms shall be mild, the matter bland, and the breast altogether in a tranquil state:

to-morrow, it will be full of pain and tumid, the discharge thin and corrosive, certainly acrid, the edges of the sore sharp and of a fiery redness, and the bottom full of sloughs.

But this will not continue; the excited action will again subside; once more the ulcer appears clean, and shows a disposition to heal, and even to cicatrize. Sometimes a cancer will close, and be quite healed; but the skin, though closed, is not sound, it is too vascular and of a dark lake colour, and the parts beneath are hard and irregular.

VIII. *Character of the Ulcer.* When the carcinoma is about to break out into open cancerous sore, the skin becomes attached to the tumor, and thin, and of a livid colour. Small capillary vessels cover the tubercles; the sword pains increase in severity, and an imperfect suppuration takes place, which opens in a deep ulcer; a foul cineritious-coloured secretion lines the cavity of the ulcer, and a thin fluid is discharged from it. The edges of the ulcer are of a fiery redness; the skin is hard, tuberculated, and everted, while the immediate margin is turned in towards the ulcer.

Although the substance wastes and the ulcer be enlarged interiorly, there continues to be a chain of tubercles closely incorporated with the skin. These tubercles are of a bright lake colour, with a shade of livid or leaden colour.

IX. Often the sore spreads superficially, and there is a large surface ulcerated and covered with a film of coagulable lymph, while around, there is a regular elevated edge, as if an attempt had been made to stop the ravages of the ulcer by this circumvallation. This margin is composed of tubercles rising above the margin of the skin, very vascular, livid, hard, and exquisitely painful.

X. *The General Condition of the Patient.* In the mean time the general condition of the patient is pitiable. Suffering much bodily, and every thing most frightful present to the imagination, a continual hectic preys upon her, which is shown in increasing emaciation. The countenance is pale and anxious, with a slight leaden hue; the features have become pinched, the lips and nostrils slightly livid; the pulse is frequent; the pains are severe. In the hard tumors the pain is stinging or sharp, in the exposed surface it is burning and sore. Pains, like those of rheumatism, extend over the body, especially to the back and the lower part of the spine; the hips and shoulders are subject to those pains. Successively the glands of the axilla and those above the clavicle become diseased. Severe pains shoot down the arm of the affected side. It swells to an alarming degree, and lies immoveable.

At length there is nausea and weakness of digestion. A tickling cough distresses her. Severe

stitches strike through the side; the pulse becomes rapid and faultering; the surface cadaverous; the breathing anxious; and so she sinks.

XI. *Carcinoma Mammæ Hydatides.* In what I am about to describe, as the hydatid tumor of the mamma, I am not influenced by what Dr. Adams published under the name *Hydatis Carcinomatosa.* He was undoubtedly much deceived. He believed that the pelicles of fat which we may see within the embrace of the diverging filaments of the carcinomatous tumor, were living hydatid animals, and the source of all the mischief. What I have now to describe is a very different tumor to outward appearance, and of a different internal structure compared with the common carcinoma.

When the mamma affected with this disease assumes its full volume, it presents a very remarkable appearance. The tumor stands prominent; its base, that is its connection with the side, is not the place of its greater diameter. It measures less round the base than a little removed from the side. It is not hemispherical, but of a squared or angular form. The nipple is not drawn in, but stands prominent, and with a natural appearance. The veins upon the surface are of a great size, and yet perhaps only bear a relative magnitude to the tumor. The tumor to a very late stage is loose from the pectoral muscle. It is irregular, and not equally

soft or elastic; the elasticity, at certain points, is so considerable as to distinguish it from the common carcinoma.

In operating on such a tumor, it is much easier to turn it off from its connections than to dissect out a common carcinoma. It is, however, a bloody operation, for many branches of arteries require to be tied.

This tumor when cut into, does not exhibit a concentrated mass, but is distinguishable into parts or clusters of lesser tumors. When these subdivisions are cut into, they present the most common carcinomatous appearance, being firm in texture, and having the ligamentous bands both forming areolæ and diverging lines, and these are distinguishable by their whiteness from the matter they embrace. In the interstices of the tubercles, some larger bags or cells are found, of a yellowish or amber colour. These cells are of various sizes, and the larger ones contain a dark fluid like blood, or bile.

It is the developement and remarkable increase of one or two of these cells, which give a prominent and square character to this species of carcinomatous mamma. This disease, like the common carcinoma, makes its attack at the climacteric period. The tumor is remarkable in the slowness of its growth, and its longer endurance or continu-

ance; nor is it attended with the same severity of pain as the carcinoma we have described. The glands of the axilla are free from disease at a later period than in the tumors described, and the mass may be extirpated with more sanguine hope of permanent advantage.

XII. *Acute Carcinomatous Tumor of the Mamma.* I know not how better to distinguish this disease, than by contrasting it with the others here described, in respect to the rapidity of its progress and the violence of its symptoms, and calling it the acute carcinoma. When several patients afflicted with cancer are in the same ward, there is nothing more remarkable in the local diseases than the difference in respect to their duration, and the rapidity of their progressive changes. The form of the disease I have now to describe is in contrast with the others; it is both more rapid in its course and more severe in its symptoms.

It begins in a hard tumor or kernel deep-seated in the mamma. At first it is loose and slips about under the finger. After a month or two it becomes attached to the skin and the surface is discoloured. The hardness extends to the whole breast, but some one part projects and is more discoloured, exhibiting a purplish red colour. The surface is shining and elastic, as if it contained a fluid. During this stage the pain is severe, and the tumor shoots like a whitlow.

The breast now enlarges, not uniformly, but in successive divisions of the tumor; and as it extends, the structure of the skin is evidently affected, and partakes of the disease. The glands of the skin appear to be enlarged, and the surface becomes studded with small white spots, and as the dark red swelling increases, these spots become more distinct. On the most projecting division an oozing takes place; it promises to suppurate, but no proper suppuration is established. Suddenly the whole tumor swells and inflames with more threatening redness, and increase of pain. Now the countenance indicates pain and anxiety. The skin has a suffused yellowish hue, and the patient feels great lassitude and prostration.

At this stage the disease is hardly to be distinguished from the fungous tumor to be next described; but when it opens and displays its last horrid aspect, it is sufficiently distinct. After much pain, the enlarged tubercles of the skin become black on the points and break, and discharge a little blood; and after this, serum drains through the dressings. Suddenly the surface becomes extensively sloughy, and the breast is deeply excavated. I have witnessed a patient remarkably relieved of pain by this opening up of the disease.

On the whole, the tumor does not diminish, it extends; the great excavated ulcer is irregular, black, and sloughy, and most offensive. The mar-

gins are elevated and tuberculated, and exhibit the same appearance as when first diseased; they rise high in an irregular ridge; distinct tubercles burst and discharge, and mortify, and form other deep sloughy ulcers, or rather deep ill-conditioned chasms. The disease extends by mortification of certain of these tubercles. Sometimes a little blood is lost. Still the tuberculated ridge extends, and the most appalling appearance of open cancer is presented.

XIII. *Cancer commencing in the Areola.* This is a rare disease. It begins in the glands of the dark areola which is around the nipple. The glands become tuberculated, and then ulcerate. The disease encroaches upon the nipple, and destroys it by ulceration. A dark zone of discoloured skin extends around the proper ulcerated surface.

Under this cutaneous ulceration the mamma is full, round, and elastic, while the other breast is loose and natural for the time of life. A fungous excrescence rises from the surface, and if it be destroyed, another soon succeeds. If these excrescences be permitted to extend, they exhibit a soft vascular fungus, and in their growth they draw after them, as it were, a general excitement and throbbing, and pain of the whole breast. But if they be destroyed, this excited condition of the breast subsides again.

In the end, when you think you have subdued

the disease, or have succeeded in keeping it in abeyance, symptoms of the constitution partaking of the disturbance, show themselves. The patient becomes emaciated, the countenance of a yellowish earthy colour, pains strike to the back and loins, and she sinks, without the disease of the mamma appearing to be aggravated.

XIV. *The acute fungous Tumor of the Mamma.* When we have made ourselves acquainted with the common course of the carcinoma mammæ, and the changes to which it is subject, we may find ourselves very awkwardly situated, unless we distinguish that, which I am now to describe, from the other diseases of the part. We may be led to say to the friends of a patient—here is a disease which will run its course in four or six years, and yet the patient's fate may be determined in as many weeks!

The tumor occupies the whole gland. The base is hard, and firmly attached to the pectoral muscle; a dark purple or lake colour is spread over the tumor, and characterizes the inflammation. The tumor seems to be about to point in three or four places; the patient entertains the hope that it is going to burst, like a common abscess, and that she is to be relieved. The colour becomes intensely red, and the surface granular.

When it opens it does not contain fluid as you

may have been led to expect; no confined matter is discharged; but a fibrous, soft, fungous substance is disclosed, which bleeds. The pain is very severe, throbbing and burning. The patient falls weak, and becomes hectic, pale, and yellow. She sinks rapidly, probably after losing a quantity of blood from the accidental disturbance of the fibrous fungus which projects. Sometimes it bleeds profusely. On removing a poultice, I have seen the blood spout out from a point as from a vein opened with the lancet. In the end, the general hardness has subsided, the prominent, exposed, and ulcerated surface is expanded. It is only prevented from bleeding by the careful application of compress and bandage. Sloughs now appear upon the surface. This state continues but a very few days; for the patient declines rapidly in strength.

INTERNAL STRUCTURE OF THE CARCINOMA MAMMÆ.

On making a section of the most common, and what we call the true carcinoma, in an early stage of the disease, we are struck with the solidity or density of its structure. The parts seem intimately blended into one mass, and we would be tempted to say, there is a remarkable defect of vascularity; as if the substance were too dense to admit of free circulation. Though this be an old opinion, we have too many proofs to the contrary.

On examining the section, a hard centre is observed, with bands of a firm white texture diverging from it. There are communicating branches of these ligamentous bands, which form meshes, and betwixt these meshes a distinct substance, a new matter is found.

Both the fibrous diverging texture and the softer substance which is secreted and deposited within the embrace of the meshes, are new textures, not known to the original structure of the mamma. Nor is it quite obvious which is the primary diseased texture: whether the bands, or the matter that is embraced within them. But as the denselines are propagated from the centre, and as they can be traced into the surrounding fat, and the glandular texture, we may presume that this is the original form of the disease, and that the softer substance is only perceived when the disease is more fully developed.

As it is the constitution of many of the natural organs to remain as it were suspended in their growth, and at a certain period to assume activity, and fully develope themselves; so, unfortunately, cancerous tumors have the laws of their constitution; and, after a period of deceitful indolence, they acquire activity, and the structure, which was before too dense for inspection, is fully blown and developed.

I have represented the dense centre and the di-

verging lines in the first drawing.—(*See Plate* I.) This breast I amputated from a lady, who came from the north of England. She lived two years after the operation, and died suddenly of an inflammation of her chest; and the attending surgeon reported to me, that at the time of her death there appeared a hard tubercle on the skin, which was inclined to ulcerate. This circumstance gives interest to the appearance presented in the drawing. For we may observe, that most of the diverging filaments disperse and terminate in the amputated mass. But one longer and larger diverging filament reaches far beyond the hardness which was sensible to the touch during life, and it extends to the utmost margin, and is there abruptly cut off. This must have been cut through, and, consequently, a scion or budding had been left, and hence the return of the disease.

It must be obvious, of how much practical importance this circumstance is; and the question naturally arises—is there any appearance which will, during life, indicate the length to which these filaments may have shot? It is too certain they may have shot far beyond the irregular hardness of the tumor, which can be felt externally. But the retraction of the nipple will indicate the general extent of these bands.

It is of much importance to ascertain the cause of the retraction of the nipple. It is produced by the peculiar carcinomatous texture of filaments,

which rise up from the original centre of the disease, and extend betwixt the ducts of the nipple; these, by condensing and destroying the spongy texture of the part, cause its retraction. Now, it unfortunately happens, that by the time these ligamentous bands have, by extending in one direction, produced the retraction of the nipple, they have, in another, extended into the cellular membrane, beyond the margin of the gland.

How often have we heard, and daily hear, the operation determined upon, because the nipple is retracted; and because thereby the true cancer is announced? Yet, to me, it is quite clear, that if the nipple be fully retracted, and if this has been evident for any considerable time, the operation has been too long deferred.

The second drawing (*Plate* III.) is taken from the breast dissected off the dead body, and where the tumor had run its course to termination in death. Here we see that the hard central mass of the tumor had advanced, and that it now involves the whole substance of the mamma and surrounding cellular texture. The whole consists now of a very solid matter, but in which we recognize still the peculiar texture, and the dense ligamentous bands of the carcinoma.

The third drawing* presents the appearance

* This Drawing (which was exhibited with many others to the Society,) is not engraved for this Part of the Volume.

of the internal structure of a tumor of the mamma, that was by the most competent judges called carcinoma; and, upon consultation, was consigned for operation. On making a section of the tumor, after extirpation, I thought we were fortunate in our determination. Here we see a tumor of the same character, as far as regards the ligamentous meshes, and betwixt these meshes a softer matter contained, which is easily dug out, leaving cells. The nipple too had been dragged down by the progress of the tumor; but the favourable circumstance is, the abrupt well-defined margin of the tumor. Instead of propagating itself by the filamentous bands spreading and embracing the cellular texture, we see here, the disease extended by a small tumor, like to the original one, growing up by its side.

On the whole, this is fully as dangerous a tumor as that exhibited in the first and second drawings, but undoubtedly it is a different disease.

ACCOUNT
OF
A STONE
AND OF
A PORTION OF CATHETER
EXTRACTED FROM
THE FEMALE BLADDER BY A DILATOR.
WITH AN
APPENDIX
BY MR. CHAPMAN OF WANDSWORTH, AND BY MR. BIRT, OF DISS, NORFOLK,
ON
THE REMOVAL OF A CATHETER AND OF A STONE
FROM
THE FEMALE BLADDER BY DILATATION.

By Sir ASTLEY COOPER, Bart. F.R.S.
SURGEON TO THE KING, AND SURGEON TO GUY'S HOSPITAL.

Read June 11, 1822.

THE dilatability of the female urethra, or meatus urinarius, is established by papers in the volumes of the Society's Transactions, by Mr. Thomas, Mr. Travers, and by myself; and it only remains that it should be considered, if better means cannot be devised to produce its dilatation than the introduction of sponge tent into the urethra, which is liable to the serious objection of its requiring to be borne for several hours, and during that time exposes the patient to the pain and inconvenience of retention of urine. I therefore resolved, on the first opportunity, to employ an instrument, constructed upon the principle of the speculum ani and speculum oris, to enlarge the passage to the bladder; and which would have the advantage of permitting the escape of the urine, whilst it dilated

the urinary canal sufficiently to allow of the admission of forceps into the bladder, to extract a stone of considerable dimensions.

An opportunity was soon afforded me by the kindness of Dr. Nuttall and Mr. M'Nab, who requested me to visit a patient of theirs, suffering under the symptoms of calculus.

CASE I.

Mrs. M'C——. I accompanied Dr. Nuttall and Mr. M'Nab to visit this lady, who had been for six months labouring under extreme irritability of her bladder, and such pain and interruption in passing the urine, as to lead those gentlemen to believe she had a stone in her bladder. Upon passing the sound I immediately discovered a stone, which Dr. Nuttall and Mr. M'Nab could distinctly hear. I informed the patient of the nature of her disorder, but assured her I could remove the stone without the use of any cutting instrument, and she had no difficulty in submitting to its extraction. In my return home I called upon Mr. Weiss, in the Strand, and requested him to make me a speculum to dilate the meatus, and he, with his accustomed ingenuity, immediately suggested an instrument infinitely better devised than any I could have contrived for the purpose.—(*See Plate* IV.)

On the 7th of January, 1822, the above medical gentlemen accompanied me to the house of our patient, and at eight o'clock in the morning I introduced the dilator. At four o'clock in the afternoon of the same day I removed the instrument, and readily introduced my finger into the bladder by the meatus, which was sufficiently dilated for that purpose, and directly felt the stone. I then passed a pair of forceps into the bladder, and immediately grasped the stone with them, and extracted it. The stone was soft, and its outer shell separated from its interior; I therefore passed a pair of flat forceps into the bladder, and removed the larger fragments of calculus; but for several days some small portions passed away with the urine.

During the removal of the stone she was resting across the bed, unconfined by bandages.

For a few days after the operation she had a severe attack of irritative fever, which required Dr. Nuttall's attention, and she was obliged to lose blood, and to have the abdomen fomented; but I had the pleasure of seeing her gradually restored to health, having never lost the power of retaining her urine; and young, and but recently married, a constant distillation of urine from the bladder would have been an evil greater than death itself.

From the facility with which the meatus yielded

to the dilator, in the foregoing case, it seemed that no absolute necessity existed for the lapse of several hours before the instrument was withdrawn, and the attempts at extraction made; and I therefore determined, in a future case, to dilate the meatus for a few minutes only, and then to extract any extraneous body which the bladder might contain.

CASE II.

On Monday, the 24th of March, I was requested by Mr. Ilott, of Bromley, in Kent, to visit a patient of his, residing in West Square, St. George's Fields, who had been occasionally subject to retention of urine, for which she had been under the necessity of employing the catheter, the introduction of which she was enabled to accomplish for herself; but the last time she introduced it the catheter broke, and a part of it remained in the bladder. Excessively alarmed at the circumstance, feeling much pain in making water, and great uneasiness at the extremity of the meatus in walking or in exercise in a carriage, she mentioned the case to Mr. Ilott, who advised her to submit to the extraction of the broken instrument. In the presence of Mr. Ilott I performed the following operation:—

The patient was placed across the middle of a

bed, with her head raised upon a pillow, her knees were separated and bent back to her chest, in which position they were held by a nurse, without the aid of bandages, or necessity for other means of confinement.

I then passed the dilator into the meatus urinarius, and turning its screw, I readily dilated the passage, to admit my finger. The dilator was retained for two minutes only, when I passed a pair of forceps between its blades into the bladder, whilst Mr. Ilott withdrew the dilator.

The catheter not being immediately felt with the forceps, I removed them and passed in my finger, when I felt the broken catheter upon the portion of the bladder above the rectum, and having raised it from thence into the axis of the bladder and meatus, I again passed the forceps, and readily extracted it.

This lady suffered very little during the operation; it was very quickly accomplished; her urine passed involuntarily until her next menstrual period, when she recovered the natural power of retention.

REMARKS.

The advantages derived from this mode of operating, in comparison with that by the knife or gorget, consist

First, In the facility with which it is executed. A knowledge of anatomy beyond that which every surgeon possesses who has been educated within the last twenty years, in this metropolis, is not required for it. Indeed, I believe that any surgeon, who practises as an accoucheur, would not hesitate to perform it.

Secondly, It is attended with but little danger; unless the dilatation be violently made, and the instrument be left in the meatus for a length of time; then contusion and irritation might be produced by it, which, in an irritable person, would lead to fever; and, perhaps, inflammation of the bladder.

Thirdly, It may be accomplished with very little pain, and in a short time; but still, further experience will be required to determine if it be best to dilate the meatus in a few minutes, or hours, or in several days, by more gradual dilatation. I feel disposed to believe, that if the stone be small, the dilatation should be accomplished in a few minutes; but if it be large, it will be better to dilate but little, from day to day, until the greatest degree of extension is accomplished; carefully avoiding contusion, which is much to be dreaded.

Fourthly, But its greatest advantage is in the preservation of the powers of retention of urine; for if the operation destroys this power, as that by incision does, I can scarcely acknowledge it to be of value;

for although it is the means of removing the pain produced by the stone, it exposes the patient to great suffering from excoriation, and with every attention to cleanliness, the constant distillation of urine renders the patient offensive to all around her.

ASTLEY COOPER.

APPENDIX.

I have long ago received the following cases from two medical friends; but have had no opportunity of making them known; but as they possess considerable interest, I shall beg leave to insert them as an Appendix to this paper.

Wandsworth, Dec. 29th, 1817.

DEAR SIR,

Finding by a perusal of the Second Part of the last Volume of the Medico-Chirurgical Transactions, that the subject of the dilatability of the female urethra has occupied your speculations; I am induced to send you a catheter, which, (as its tarnished appearance will indicate,) remained nearly three weeks in the bladder of a female, it having been allowed to slip in, in consequence of the operator leaving his patient's bed-side to reach a basin from a table; the bladder at the same time being much distended with urine. The extraction of this instrument was effected by the agency of

the finger alone, without any previous process of the sponge tent, and though not without difficulty, yet with comparatively little pain to the patient, notwithstanding it was done under circumstances the most unfavorable, it being necessary to conceal both from the patient and her friends, the real nature of the accident. I had no notion the canal would dilate so readily, until having repeatedly introduced a common forceps without effect, I was led to try my little finger, in order to ascertain with greater certainty, the precise situation of the catheter, when finding it pass pretty readily I introduced the forefinger of my right hand, till it came in contact with the handle of the instrument, which I gently raised and conducted toward the orifice of the meatus, when by a combined movement of my right hand finger in the bladder, and my left hand upon the abdomen, I succeeded in extracting the instrument without my patient or any body else being at all aware of what I was doing. I merely mention this as additional evidence, if any were necessary, of the facility with which dilatation of the urethra may be effected, and as confirmation of the propriety of the practice pursued in Mr. Thomas's case of the ivory ear-picker, whose patient must be congratulated upon her fortunate escape from the effects of the bistouric cachée.

Should this account be of any use in encouraging surgeons to adopt the practice of dilatation, in

cases of calculus, in preference to the more painful and hazardous operation of cutting, you are at liberty to make what use you please of it, or if that should be thought necessary, I would draw up a statement of the case at length.

I am, my dear Sir,
with the greatest respect,
your obliged and obedient servant,
THOMAS CHAPMAN.

P.S. I have a calculus in my possession, of pretty large size, which I took from the urethra of a male, by excision, when within four or five inches of the extremity of the glans penis; the man not knowing up to the time of the operation that he was subject to stone, never having felt any previous pain or difficulty in voiding his urine.

A Case of artificial Dilatation of the Female Urethra, &c. By GEORGE BIRT, *Esq. Member of the Royal College of Surgeons.*

IN January 1814, I was consulted by Mrs. Borton, a small woman of relaxed habit, about forty-five years of age. Her various symptoms led me to suppose she had a stone in the bladder, and I urged the necessity of an examination to ascertain whether my conjecture was correct, but she positively refused it, alleging, that a physician she had

consulted had done it repeatedly, without being able to detect any stone: as she would not accede to my proposal I declined visiting her.

On the 30th of April her husband came to me very early in the morning, and informed me his wife was in excruciating agony, which arose from her not having been able to pass any urine for many hours, and requested my immediate attendance upon her. Upon my seeing her, I found the bladder was very much distended, and I stated the immediate necessity of my drawing off the urine with the catheter, with which she very readily complied. Upon my introducing the catheter into the bladder, I distinctly heard and felt it strike against a calculus, which receded, and about four pints of urine was drawn off. I then stated to her the necessity of her having the stone extracted; and she told me she had been advised by a medical gentleman to go into the Norfolk and Norwich Hospital, to undergo the operation of lithotomy, to which she objected. I assured her I had every reason to believe I could extract it without cutting, and she greatly wished me to do every thing I thought right for her; I then left her with a promise of seeing her the following day; but in the evening her husband again came, and informed me his wife was in the same situation as when I went to her in the morning, and begged me to go to her assistance immediately. Upon my arrival she told me she had not passed any urine since I left

her, and was in very great pain from distortion of the bladder. Upon passing the catheter, I struck against a stone as in the morning. I then placed her in the situation for lithotomy, and passed a probe into the bladder, I then passed another probe into the bladder, and very gently dilated the urethra, which in a few minutes allowed me room to pass in a pair of forceps and lay hold of a stone. I then passed the fore-finger of my left hand along the vagina, and kept the stone from slipping back into the bladder; in less than ten minutes I extracted it. I passed a catheter into the bladder, to ascertain whether there were any more stones. As soon as the catheter entered the bladder it struck against another stone, which I distinctly felt by introducing my finger into the bladder through the meatus urinarius. I introduced the forceps a second time into the bladder and grasped another stone. My finger was passed into the vagina as before; but this stone being larger than the first, was not quite so easily extracted, and the woman growing quite impatient, and my not having sufficient assistance to keep her quiet, induced me to touch the orifice of the meatus with the point of a lancet, which immediately gave exit to the stone; the incision which I made was not more than the eighth of an inch in length, and could I have prevailed upon her to have been quiet a few minutes longer, I am certain the stone would have been as easily extracted without this slight incision.

I was not half an hour from the commencement till I extracted both stones. Upon sounding the bladder a third time, no more stones could be detected.

I directed her an opiate, and upon calling the following day found she had not been able to void any urine. I introduced the catheter, and the next day she could retain her urine and expel it whenever she wanted, without any inconvenience, and was able to attend to her domestic concerns. She has remained up to the present time perfectly well.

Diss, Norfolk,
Dec. 19, 1817.

CASE

OF A

LARGE GLANDULAR TUMOR IN THE NECK,

REMOVED BY

J. P. VINCENT, Esq.

SURGEON TO ST. BARTHOLOMEW'S HOSPITAL.

Read April 16, 1822.

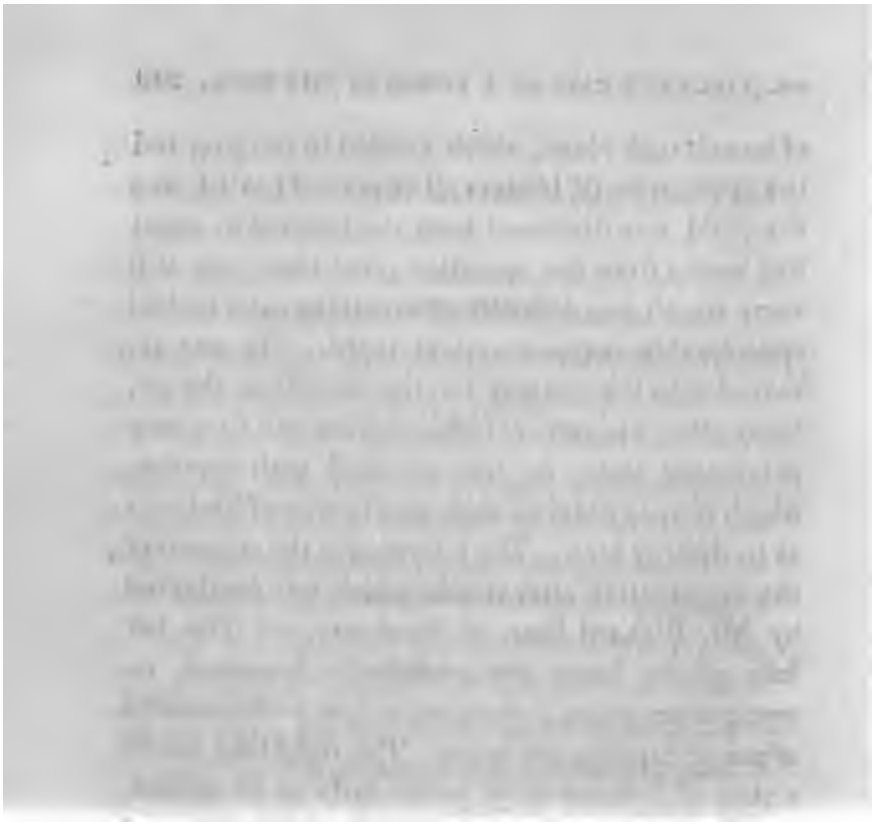
WILLIAM Dennis, aged 6 years, was admitted into St. Bartholomew's Hospital, Nov. 5th, 1821. Fifteen months before, a small tumor, like a slightly enlarged gland, was remarked in the middle of the neck on the right side. This remained nearly stationary until last August, when it increased rapidly, and at the time of his admission, it occupied the whole of the right side of the neck, extending from the ear to the clavicle, and laterally from the edge of the trapezius to the trachea, projecting in a proportionate degree beyond the natural contour of the neck. It had a lobulated feel, the integuments being free over it, and at first view it appeared moveable; but when firmly grasped it was evidently firmly connected at its basis. It was not painful, and did not impede either the motion of

the head or respiration. The boy was apparently in good health. On Nov. 10th, the tumor was removed. Two semilunar incisions were made from the ear to the clavicle, including a portion of skin between them. The integuments and the mastoid muscle, which extended over the anterior portion, were dissected off. The tumor, which was divided into many portions, was drawn out, and a large mass was removed without much difficulty, by cutting through the firm membranous septa, which were interposed between the lobes. There still, however, remained a considerable portion in connection with the large blood-vessels, extending from behind the clavicle to the mastoid process. The whole of this was removed, care being taken to draw out each portion from its situation, and to divide the septa with the edge of the knife turned towards the tumor. One portion of the tumor passed behind the internal jugular vein, and another was in contact with the pleura. During the operation there was very little hæmorrhage, and it was only necessary to tie one small artery. The situation and magnitude of the tumor rendered it impossible to avoid wounding nerves of importance. The nervus accessorius, and some branches of the cervical plexus were divided.

For some time the wound did not go on satisfactorily. Erysipelas supervened on the third day, and extended over the face. On the tenth day, difficulty of breathing and a very disordered state

of bowels took place, which yielded to purging and the application of blisters. The wound healed, and the child was dismissed from the hospital in about five weeks from the operation; but there was still some cough and difficulty of breathing, and he had considerable perspirations at night. He was removed into the country for the benefit of the air. Soon after his return home, whilst still in a very debilitated state, he was attacked with measles, which disease induced such an affection of his lungs as to destroy him. The following is the account of the examination after death, which was conducted by Mr. Richard Best, of Newberry.—"The left lobe of the lungs was completely destroyed, no vestiges remaining; there were four or five ounces of pus occupying the space. The right lobe was in a state of inflammation, particularly on its surface, the vessels being enlarged, which may be attributed to the increased organic duty it had to perform. There were partial adhesions of the pleura, and also of its reflected portion deeply seated; three or four glands were discovered enlarged, not considerably; the mesenteric glands had not taken on any part of the disease. Near the situation of the original tumor, one or two of the cervical glands had begun to enlarge."

Newberry,
March 20, 1822.



EXPLANATION OF THE PLATES.

PLATE I.

Exhibits the appearance of the fragments of knives found in the stomach of John Cummings, whose case is narrated by Dr. Marcet, page *52*.

Figures 1, 2, 3, &c. to 12, and *Fig.* 21, represent the remains of blades, which were found in the stomach after death; the corrosion which they have undergone, in various degrees, is very remarkable, some of them being almost as thin as paper, and full of fissures, with a singular fibrous appearance, while others, and especially No. 7, have been scarcely acted upon. This last, as is seen by the mark, was made of CAST STEEL, a circumstance which accounts for its being so little corroded. The name BATEMAN also remains quite distinct. All those are black, as if only protoxidated.

Fig. 15, appears to have been a horse lancet.

Fig. 16, is a Lieutenant's uniform button.

Fig. 35, and 36, are silver oval buttons, which were probably the ornaments of a handle.

Figures 34, 28, 29, 30, 31, 32, 33, are portions of the back-springs of knives, much corroded, but still recognizable.

Fig. 27, and all the figures upon that line, so far as *Fig.* 28, and 37, are all fragments of knives so disfigured as to have entirely lost their original form.

Fig. 38, is the metallic lining of a small knife, the two ends of which appear to be of silver, the handle itself (which was probably of horn) having entirely disappeared.

All the objects above described, together with the portions marked 13, 14, 18, and 19, were found in the stomach, with the exception of one of the blades, which was found fixed in the rectum, as stated in the narrative.

Fig. 17, is the back spring of a knife, which must have been uncommonly large. It has a remarkably sharp point at one end. It was this which stuck in the colon which it had transfixed, and probably was the principal cause of the man's death.

Fig. 20 to 26, are iron plates lining the handles, discharged by the patient on board the Isis, and transmitted by Mr. Kelly, Surgeon to the ship, to Dr. Lara, who sent them to Dr. Curry. These are rusty and covered with red oxyd, as if acted upon by sea-air or sea-water.

Fig. 39 and 40, are horn handles, also discharged by the patient, while on board the Isis. The

one marked 39, distinctly shows the initials W. C. cut in the horn by the sailor to whom the knife had belonged, as mentioned in the narrative.

PLATES II. and III.

Refer to Mr. Charles Bell's Paper on Carcinoma Mammæ.

Plate II. Exhibits a section of the Carcinomatous Mamma.

A. The firm dense centre of the disease.

B. One of the filaments, which diverging from the centre, has extended to the surface of the extirpated mass. A small portion of thin filament being left in the cellular membrane of the side, was probably the cause of the return of the disease after operation.

C. The filaments proceeding from the central nucleus into the nipple, and which are the cause of its retraction.

Plate III. Exhibits the further progress of the Carcinoma Mammæ. A section of the diseased part being presented.

A. The condensed texture of the Carcinoma, exhibiting filaments encircling a peculiar matter.

B. B. The skin which has partaken of the diseased structure.

C. C. Portion of fat, embraced in the diseased texture.

D. The pectoral muscle, with which the diseased mamma has become incorporated.

PLATE IV.

Represents the instrument employed by Sir Astley Cooper for effecting the dilatation of the Female Urethra, with a view to the extraction of calculi from the bladder, as described in his Paper, page 235.

END OF VOL. XII.—PART I.

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CONTENTS

OF

VOL. XII.—PART II.

Page

XXI. AN Account of two Cases of Biliary Calculi, of extraordinary Dimensions. By T. Brayne, Esq. of Banbury. Communicated by Mr. Travers..... 255

XXII. On the Influence of Local Irritation, in the production of Diseases resembling Cancer, and other morbid Alterations of Structure. By Henry Earle, Esq. F.R.S., Assistant-Surgeon to St. Bartholomew's Hospital, and Surgeon to the Foundling Hospital..... 268

XXIII. On Chimney-sweepers' Cancer. By the same..... 296

XXIV. On the Destruction of the Fœtal Brain. By Mr. Hammond. Communicated by Mr. Travers..... 308

XXV. A Case of Bronchocele. By Henry Shuckburgh Roots, M.D. Physician to the Carey Street Public Dispensary, and to the St. Pancras Infirmary..... 310

XXVI. On the Dilatation of the Male Urethra by Inflation, for the Extraction of Calculi from the Bladder, as practised in Egypt, nearly 250 years ago. By Robert Masters Kerrison, M.D..... 315

XXVII. Cursory Remarks on Small-Pox, as it occurs subsequent to Vaccination. By George Gregory, M.D. Physician to the Hospital for Small-Pox and Vaccination, at St. Pancras..... 324

XXVIII. On the Comparative Virtues of different Kinds of Sarsaparilla. By Mr. John Pope. Communicated by Mr. Earle..... 344

Page

XXIX. Case of Stricture of the Urethra treated by Seton. By James M. Arnott, Esq..... 351

XXX. On the occurrence in Persia of the Epidemic Cholera of India. By John Cormick, Esq. Communicated in a letter to H. L. Thomas, Esq..... 359

XXXI. Account of a rare Case of Complicated Labour, from Locking of the Heads of Twins; to which are subjoined Notices of two recorded Cases of the same Description; with a Suggestion of a Method for effecting Delivery under similar Circumstances. By John Allan, Esq., Member of the Royal College of Surgeons. Communicated by Dr. Davis..... 366

XXXII. A Case of Ascites, connected with Utero-gestation, successfully treated by Operation. By George Langstaff, Esq., Surgeon..... 372

XXXIII. Further Account of the Extraction of Calculi from the Bladder, without the Use of any cutting Instrument. By Sir Astley Cooper, Bart. F.R.S. Surgeon to his Majesty, and Surgeon to Guy's Hospital..... 381

XXXIV. Some Observations on the Powers of Circulation, and the State of the Vessels in an inflamed Part. By A. P. W. Phillip, M.D. F.R.S. Ed. &c. Communicated by Mr. Earle..... 396

XXXV. An Essay on the Proximate Cause of the Disease called Phlegmasia Dolens. By David D. Davis, M.D. 419

XXXVI. On the Effects of Stricture of the Urethra, particularly of the sacculated State of the Bladder; with an Inquiry into the Mode of Treatment to avert this latter Consequence of Stricture, which is so often fatal. By John Shaw, Esq..... 461

Appendix to Mr. Shaw's Paper..... 481

XXXVII. Inquiries respecting the Anatomy of the Eye. By Arthur Jacob, M. D. Member of the Royal College of Surgeons in Ireland, Demonstrator of Anatomy, and Lecturer on Diseases of the Eye in the University of Dublin. Communicated by Mr. Earle..... 487

Page

XXXVIII. On Injuries of the Pelvis. By Joseph Swan, Esq. of Lincoln. Communicated by Mr. Earle..... 520

XXXIX. Account of a Case of Axillary Aneurism; in which the Operation of tying the Subclavian Artery was successfully performed. By Harry Leake Gibbs, M.D. Member of the Royal College of Surgeons, in London. Communicated by B. C. Brodie, Esq..... 531

XL. Rupture of the Uterus, and subsequent Recovery of the Patient. By James Powell, Esq..... 537

XLI. Illustrations of the Medical Properties of Quinina. By John Elliotson, M. D. Fellow of the Royal College of Physicians, and of the Cambridge Philosophical Society, and Physician to St. Thomas's Hospital..... 543

XLII. Case of Preternatural Growth in the Lining Membrane covering the Trunks of the Vessels proceeding from the Arch of the Aorta. By John Yelloly, M. D. F.R.S. &c..... 565

XLIII. Abstract of the History of a Case of Strangulated Exomphalos successfully operated on, Fifty Hours after Parturition. By Mr. Gore. Communicated by Mr. Travers..... 570

Reference to the Plates..... 572

List of Donations..... 573

Index..... 591

AN ACCOUNT OF TWO CASES OF BILIARY CALCULI, OF EXTRAORDINARY DIMENSIONS.

By T. BRAYNE, Esq.
OF BANBURY.

COMMUNICATED
By Mr. TRAVERS.

Read June 25, 1822.

THE following cases relate to some interesting points in the pathology of the hepatic system, of which there are I believe, at present, but few recorded instances. They are extraordinary examples of the vast powers of the vis medicatrix, unaided by art, producing, in vital organs, most important, though scarcely suspected, changes, and which, however slowly, were yet ultimately successful.

CASE I.

In the latter part of Nov. 1820, I was called to visit widow Woodward, from whom I collected the following particulars. She was *55* years of age, of a spare thin habit, and melancholic temperament.

She reported herself to have enjoyed uninterrupted good health for years, until the last twelve months, during which she has been afflicted with an uncommon languor and prostration of strength, so as to render her unfit for her occupation, that of nursing the sick. About six months before, she was first seized with paroxysms of pain in the epigastrium, which generally commenced towards night, and continued for several hours. These attacks had returned every two or three weeks, for five or six successive times, and were for the most part, but not always, succeeded by slight jaundice, which commonly soon disappeared, and left her as well as usual. The pain was seldom very severe, and she had never applied for medical aid at these periods. About a month after the last attack of pain, she became the subject of continued fever. At this time (Nov. 26, 1820,) I found her labouring under the following symptoms; a small quick pulse, a foul tongue, anorexia, almost total privation of sleep, constipated bowels, scanty secretion of high coloured urine, and great mental irritability, almost amounting to complete alienation. She suffered no local pain whatever. In this state she continued, with little or no variation, until the 29th of October, when she was suddenly seized with severe pain in the left iliac region, accompanied by considerable tenderness on pressure. This urgent symptom continued unmitigated for sixteen or eighteen hours, after which she became suddenly easy, and soon passed a natural alvine evacuation,

which contained a calculus of extraordinary size. This was followed in a short time by an abatement of the febrile symptoms, but she remained in a state of low muttering melancholy for some months, from which she did at length recover, under the gentle and long continued influence of mercury on the system.

The calculus (see Plate V. fig. 1.) resembled a pigeon's egg in form, but was perhaps rather larger and more flattened. It was of a light yellow color, variegated with brown, and had very much the appearance of an aggregation of soiled particles of spermaceti. The surface was rough and tuberculated, and some of the largest elevations were striated longitudinally. On being broken, it exhibited a radiated and shining fracture throughout the facettes of the radii, meeting in the centre, and having here and there interposed between them minute portions of a brown friable matter, particularly towards the middle of the calculus. There was nothing like a concentric laminated arrangement in any part of it. It possessed also the following properties:

Specific gravity, just exceeding that of distilled water.

Weight (next day), 162 grains.

Transverse circumference at the widest part, $3\frac{3}{8}$ inches.

Long diameter, $1\frac{3}{8}$ inches.
Short diameter, $1\frac{1}{8}$ inches.

When ignited, it melted, and burnt almost entirely away, with a strong fatty odour, leaving a very small black residuum. A quantity of it dissolved almost completely in boiling alcohol of the specific gravity. 850, and was deposited again on cooling in the form of beautifully delicate micaceous laminæ, which were re-dissolved on again applying heat. The small portion which was not taken up by the spirit, consisted of minute granular semi-transparent fragments, hard and resinous in appearance, and of a light red color, like shell-lac. Perhaps this may be considered as the coloring matter of the bile. Another portion was boiled in some liquor potassæ, which it tinged of a greenish hue, but it did not seem to have dissolved any, or very little. On adding to it some nitric acid, the solution remained unchanged in its transparency.

This calculus was different from any of the biliary species which I had before seen, in its wanting the laminated texture, and in containing a larger proportion of adipocire, or cholesterine, as Thenard has called it. Fourcroy affirms that some biliary calculi consist entirely of this substance. M. Robiquet, in an analysis of some calculi which he calls *intestinal**, discovered a quantity of phosphate of lime equal to half the adipocire. On treating the

* Journal de Medicine, Chirurgie, &c. Tome xxviii. p. 391.

remnant undissolved by the spirit, however, as he directs, no trace of this salt could be detected in this concretion.

From the comparative mildness of the symptoms proper to the passage of a large gall-stone, I was dubious, at first sight, whether the calculus was to be considered biliary, or of the nature of those which have been called intestinal. I have never seen an instance of the latter, but my chemical examination, though probably imperfect from inexperience of these processes, appeared to be tolerably decisive of its biliary origin.

In the early part of the present year (1822), I was again desired to visit this patient, and I found her labouring under the usual symptoms of hydrothorax in a severe degree, which, she informed me, had been gradually increasing for some time. No biliary derangements had occurred in the interval, so far as I could learn. The common course of treatment was adopted for her relief, but with no success; the urinary secretion could never be materially augmented, and she died on the 4th of March last, about a year and a half after she had voided the calculus.

SECTIO CADAVERIS.

I obtained permission to inspect the body on the second day after death. On opening the ab-

domen, the hepatic system was the first object of examination. The liver was of the usual size and appearance in respect to color, and seemed to vary from natural structure in nothing but in being rather more close and solid in its texture, and more resisting to the impression of the finger. The cystic and hepatic ducts were of the usual dimensions, but the gall-bladder itself was smaller and very much thickened, containing only a little pale unhealthy bile. It had contracted a strong adhesion, about the size of a shilling, to the duodenum, close to the pylorus. There was no uncommon appearance of vascularity. On removing these parts from the body, a communicating aperture, large enough to admit a crow-quill, was discovered in the centre of the adhesion. The duodenum and gall-bladder were afterwards inflated from the hepatic duct and preserved. From this the drawing (Fig. 2.) was taken. One kidney was studded with numerous flat tubercles in its cortical part. There was no other morbid appearance of any consequence except an accumulation of serum in the right cavity of the pleura, amounting to about ℥ xxiv. the peculiar symptoms of which had been unequivocal for some time before her death, and were considered as the cause of it.

After deciding that the calculus was of a biliary nature, it remained for theory to attempt the explanation of its passage into the intestine. During my first attendance upon her, I confess that I was inclined to conjecture, on this point, that it had pass-

ed by dilating the duct, and I believe I was not singular in resorting to such an explanation. (See a case in Vol. VI. p. 98. of the Transactions of this Society.) I have once seen the biliary ducts of very large dimensions, and I have heard of others who have made the same observation. It seemed to me easier to explain the symptoms by this supposition, rather than by the long and painful process of adhesive inflammation and subsequent ulceration of the parietes of the parts concerned. This, however, the dissection has proved to be the manner of its transition, for there can be no doubt that the aperture in the adhesion was once large enough to give passage to the stone in question. It has been properly suggested to me that it would not be altogether without its use to mention this contradiction of the theory by the fact. It may serve to inculcate the necessity of caution in those pathological conclusions which have not anatomical demonstration for their basis. In the prosecution of morbid anatomy we have not unfrequent occasion to observe changes of structure quite unexpected, as well as the apparent want of correspondence between the actual derangement of texture, and the previous indications during life. The circuitous, and often not painful, passage of pointed extraneous bodies, needles for example, through the thickest part of a limb, previous to their expulsion from the body; and the track of the restorative vessels over the longest diameter of the cornea to an ulcer, are familiar examples of inexplicable phenomena. The

process which nature often chooses to adopt in her mysterious operations is sometimes found to be that for which human sagacity can discover no adequate motive. "*Causa latet, vis est notissima.*"

CASE II.

Grace Adams, at 65, married. In the evening of the 24th of Feb. 1822, I was requested to visit this patient without delay, for she was considered to be dying. On my arrival her friends informed me that she had laboured under a total obstruction of the bowels since the 19th. Various measures had been resorted to by the medical attendant without success. I found her lying on her back, with the knees raised, the abdomen prodigiously inflated, with frequent gripings, the extremities cold and damp, and the pulse scarcely perceptible at the wrist. She was nevertheless sensible, though her articulation was indistinct, and her countenance did not at the time strike me with the hippocratic expression of a dying person. She vomited incessantly, and I was told had rejected every thing from the stomach since the commencement of her illness on the 19th, when the sickness had suddenly invaded her without any apparent cause. Thus the case seemed almost hopeless. I ordered her to have three drops of croton oil in two pills, of which she was to take one directly, and repeat it in four hours if necessary. She was desired to have warmth ap-

plied assiduously to the extremities by every possible means, hot fomentations to the abdomen, and in an hour or two a little wine. The first portion of the wine was vomited immediately, but some was subsequently retained. At the end of four hours she took the second croton pill. By this time the extremities had recovered a more equable circulation. On the following morning, the bowels had not been relieved, and she had been very restless and without sleep, but the stomach was more quiet than it had been. Some castor oil was next given, and at intervals a colocynth pill in combination with minute doses of opium. In the evening some thin offensive dark-colored stools had been procured, and the more immediately dangerous symptoms had subsided. Various purgatives and injections were persisted in, and after two or three days, evacuations, more natural in color and smell, were freely passed. The figured portions, however, were observed to be very small and somewhat flattened, which induced me to suspect that there might be a stricture in the colon or rectum, but in a day or two subsequent, full sized consistent stools contradicted that supposition. From this time she rapidly improved, and in about a fortnight from the time when I first saw her, she was able to leave her bed. At this time, I discontinued my visits, conceiving her recovery to be as certain as the precise nature of her disease had been unintelligible. A few days after this period (March 11), she brought me the calculus, Fig. 3, and informed me that it had come

from her suddenly while sitting at breakfast that morning, and that for the two preceding days she had experienced, almost constantly, a great degree of tenesmus and straining at stool, as if from the presence of indurated fæces; attended also with a griping pain in the abdomen, and a forcing sensation at the anus. It was now expected that the cause of these complicated ailments being at length obtained, all probability of future mischief was removed. But on the 17th of March the same train of symptoms recurred in a slighter degree, and in a few hours she passed the calculus, Fig. 4. Since this time the evacuations have been regularly inspected, but nothing more of the kind has been observed, nor has there been any reason to expect it. I have seen her this day (June 4th), and she tells me that she is moderately well, but complains of a considerable dyspnœa during motion, or the recumbent posture, accompanied also with a troublesome cough. Her legs, she says, are swollen at times towards night, and there seems reason to believe that the thorax is not altogether free in this case from hydropic accumulation.

With respect to the state of this patient anterior to the symptoms of obstruction, she gave the following history. For some months previous to the severe symptoms for which my attendance was requested, she had been frequently affected with a dull pain in the epigastrium, together with a great sense of weight and oppression in that situation.

These attacks commonly occurred towards bed-time, and varied in their continuance from half an hour to two or three hours. They were not accompanied by sickness, and were never followed, so far as she knows, by the slightest degree of jaundice. The paroxysms of pain, when most severe, produced great perspiration, and were relieved rather by an erect than a stooping position. Her bowels were generally regular without the aid of medicine. Her tongue was often foul, and her appetite indifferent. The pain would often come on for several nights successively, and for two or three weeks preceding the symptoms of obstruction, they had visited her every night, but were not much increased in severity. This affection had not much altered her appearance, which was that of a strong hard-working woman. She had tried various remedies with little or no relief, and had given up all thoughts of seeking for more, conceiving that her former ailments were no way productive of her recent illness. The pain and load at the epigastrium however are now gone, and she only feels the constriction across the chest, which is common to the degree of dyspnœa of which she still complains.

The calculus, Fig. 4, which was first passed, is of a singular form, being somewhat of a flat square shape, with its angles rounded, and the two sides of its greatest surface considerably hollowed out, as if compressed when soft by some convex body. It is curious too that on applying the most flattened ex-

tremity of the smaller round calculus, Fig. 3, to the deepest of these concavities, the correspondence gives the idea of former intimate juxta-position. It (Fig. 4.) is nearly smooth and of a deep yellow color over the greatest part of its surface. It is obviously laminated, for in places the exterior layer is broken off, and displays beneath a dark brown matter, several successive layers of which are seen in the concavities where the attrition has been most considerable. The larger one, Fig. 4, weighs 176 grains, the smaller, Fig. 3, 159. Both swim in distilled water.

The smaller calculus is of a more regular shape, something similar to half a large pigeon's egg. It is studded over a large part of the surface with small irregular tubercles of a greenish hue, like fish-skin. In other parts, it is of a light ochre color, and perfectly smooth. The extremity which I have remarked to adopt itself so well to one concavity of the other calculus, has also a laminated texture, and the inferior layers are of the same dark brown color as the former.

In composition these calculi are, I should think, of the same nature as the majority of biliary concretions, of which they seem to possess all the external characters. They seem to me to contain a much larger proportion of the friable matter to the cholesterine than the calculus of the first case here narrated. I have been averse to destroy their integrity for the purposes of analysis, for there is to

me something more interesting in their form, and apparent mutual connexion, than in the nature of their ingredients. I shall not lose sight of this patient, who has been desired still to examine the contents of the alvine secretion, for I have sometimes imagined that there might be a third stone, which would complete the series of these curious products of morbid action. A comparison of these cases will lead to several interesting points of remark. In some respects they run nearly parallel. The sex and ages of the patients;—the comparatively slight degree of hepatic irritation excited;—the nocturnal returns of the pain in the epigastrium;—the trivial jaundice in one, and the total absence of it in the other;—the severity of the symptoms of the intestinal obstruction;—and the subsequent dropsical affection of the thorax, are obvious coincidences. The calculi in some respects are very dissimilar, though they have many properties in common. In that obtained from the patient Woodward, the cholesterine appears nearly pure, and its radiated arrangement is not more curious and beautiful, than difficult to conceive in its origin. The deposition by laminæ may very naturally be expected to result from some peculiar progressive effects of a vitiated and stagnant secretion. But on the formation of the radiated example I am incapable of proposing an explanation.

I have the honor to present these calculi for the inspection of the Society, through their secretary, Dr. Roget.

ON THE INFLUENCE OF

LOCAL IRRITATION,

IN THE PRODUCTION OF DISEASES RESEMBLING

CANCER

AND OTHER MORBID

ALTERATIONS OF STRUCTURE.

By HENRY EARLE, Esq. F.R.S.

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Read Dec. 10, 1822.

THERE are few more trying situations in which a surgeon, anxious to fulfil his duty, can be placed, than when called upon to decide on the propriety of subjecting his patient to a painful and perhaps hazardous operation, the result of which must, from the very nature of the case, be extremely doubtful. On the one hand, humanity pleads most powerfully against increasing the sufferings of a fellow-creature, without some reasonable prospect of affording lasting benefit; whilst, on the other hand, the cruelty of abandoning him to his fate, without hope or remedy, and thus perhaps sacrificing a valuable life, may be urged with equal if not superior force. This anxious and most painful alternative applies not only to cases of extensive mechanical injury,

where we are often called upon, without any previous knowledge of the powers of the constitution, to decide between mutilation and probable destruction, but likewise to cases, which, from their progress and character, bear a close resemblance to those malignant affections, which experience teaches us are too deeply rooted in the constitution to be eradicated by any local operation. It is to the latter description of cases that I wish to call the attention of the Society.

Much has been done of late years by many eminent pathologists, in assisting us to discriminate between these diseases, and in many instances, the characters are so well defined, and the constitutional derangement so manifest, that we are enabled to form a tolerably correct prognosis of the probable issue. The almost certain recurrence, or co-existence of disease in remote parts of the body, and particularly in some vital organ, which so constantly happens in fungoid affections, after the local complaint has been freely and completely removed, has induced many practitioners to decline operating altogether. My own experience, and the extensive opportunities I have had of witnessing the practice of others, in these lamentable cases, have convinced me that such a decision is highly honorable to the profession, and is best calculated to rescue it from opprobrium.

The same observations will hold good in most cases of carcinoma, where the constitution is evi-

dently tainted, although in these latter cases it may sometimes be expedient to obtain temporary ease, and a prolongation of life, by the infliction of a tractable wound, with a view to remove or prevent one, which will inevitably lead to a premature and painful termination of existence.

Not unfrequently however, we meet with instances of disease, which, although at first sight they may put on so malignant an aspect, as at once to deter us from proposing any operation, yet, on closer enquiry into the history of such cases, we shall often find that the morbid action has been first excited by some *local* irritation, and subsequently maintained by *local* circumstances. In some of these cases, the constitution may be previously disposed to disease, but in many it is only affected by the continual pain and excitement produced by the local affection. Having met with several instances of this description in which patients have been rescued from the gradual inroads of a lingering disease, and perfectly restored by extirpation of the local malady, I propose in the following pages to adduce some of these cases, and to point out certain circumstances which have not met with the attention they merit, although they will be found materially to influence the characters of disease. From the experience I have already had, I feel convinced that, by early directing our views to counteract the influence of local irritation, we may often succeed in restoring healthy action; whilst, in more advanced stages of disease,

we may be induced to resort to operations with far greater confidence of success than the appearance and progress of the complaint would warrant, independently of any such exciting causes.

On Diseases of the Lips.

When any morbid action takes place in the immediate vicinity of one of the external apertures of the body which are concerned in the necessary operations of ingestion or excretion, they are from that circumstance alone particularly liable to assume an indurated unhealthy aspect from the continual irritation to which they are subjected in the diurnal performance of these several functions. Thus any ulcerations about the mouth will often be extremely difficult to cure, and, if neglected, will assume the induration and other characters of carcinoma*. When this occurs in advanced life, and has existed for some time, so as to include any considerable portion of surrounding integument, it will generally exhibit a very unpromising aspect, and induce the surgeon to form a most unfavorable

* Induration appears to be the result of chronic, or in some cases of subacute inflammation causing interstitial deposit. A familiar illustration of the effect of irritation in producing induration is often afforded by herpes præputialis, and common excoriation of the prepuce, when improperly treated with stimulating applications. I have many times seen such cases assume all the hardness and other characteristic marks of chancre, which have readily subsided and healed under a more mild plan of treatment.

prognosis. The continual irritation, arising from the introduction of food, the effort of speaking, and the constant flow of saliva, are sufficient to keep up the morbid disposition, and to prevent any reparative effort of nature from being carried into effect. After a time, the neighbouring glands will often become enlarged, which confirms the surgeon in the opinion he had been induced to form of the nature of the affection. It has fallen to my lot to see several of these diseases about the lips, and from the result in all but one case, I am led to believe that they are not carcinomatous, or dependent on any constitutional disease, but arising from the continual local irritation above alluded to. If taken early, I have no doubt that many such cases may admit of being cured by the rigid discipline, of which I shall hereafter have occasion to speak; commonly, however, they do not fall under the eye of the surgeon until they have made considerable progress, when it is both safer and better to remove the disease, which the yielding nature of the parietes of the mouth will readily admit of to a very considerable extent without any proportionate deformity. I shall briefly mention the particulars of such a case.

Mr. H. Webb, a native of the West Indies, aged 64, called on me in June 1816, to consult me respecting a disease at the angle of his mouth, which had commenced in Dec. 1814, with an induration which soon ulcerated, and had continued to make

progress, unchecked by any application. During the whole of this period he had resided in the Bahama Isles. At the time of his calling upon me, the right angle of the mouth had ulcerated so far as to allow the lip to fall and to admit of a constant flow of saliva. The ulcer had a very irritable appearance, and occasionally bled, and around this, to a considerable extent, the cheek had a very firm scirrhous feel, and the glands under the jaw were enlarged. He suffered constant severe pain, and was scarcely able to introduce any food into his mouth, from the swollen state of the lips, and the pain it caused him. The discharge had a most fetid smell, and affected his breath so much as to make it very unpleasant to be near him. On minutely examining the part, it appeared to me possible to remove the whole of the disease, and by taking away the teeth in the lower jaw, which were rendered useless by the loss of all the corresponding ones in the upper, that the cheek and remaining portion of the lips might be brought into contact. I represented to him that I could not answer for the success of this operation, that every thing would depend on being able to obtain union by the first intention, and that if we failed in this, it was more than probable the wound would never heal: I further stated that if we succeeded in closing the wound, the relief might only be temporary. Still, however, I entertained hopes of a more prosperous termination. I recommended him not to abide by my decision, but to take the opinion of other sur-

geons. He applied to two of the ablest and most experienced in town, who both declined attempting any operation, in consequence of his age, and the progress of the complaint, which they both considered as confirmed cancer. He returned to me, and told me what had passed, adding, at the same time, that he was willing to submit to any trial, however slight the chance of success; that I offered him a possibility of recovery, and the other gentlemen left him no alternative but to linger on a little longer, a disgusting object to others, and loathsome to himself. I requested him to take further opinions, but this he declined. On sending him to an eminent dentist, to remove the teeth in the lower jaw, that gentleman was unwilling to touch them, conceiving that the gums, which were very spongy, had taken the same diseased action. I mention these circumstances with a view to prove the malignant character of this disease.

On the 28th of June, I removed the whole of the diseased skin, including the angle of the mouth with a large portion of each lip, together with a considerable part of the cheek. Previously to this operation, I removed five teeth, which materially contributed to the success of the case, both by allowing the cut edges to come more closely into contact, and by removing the possibility of their projecting and interrupting the healing of the wound. It was necessary to tie two very considerable vessels, but by employing fine silk ligatures, and

cutting them off close to the knot, they did not interfere. This circumstance deserves notice, as it is very probable that if the ligatures had been suffered to hang out of the wound, they would have acted as a conduit for the saliva, and would have prevented its union. The parts were brought together with four hare-lip pins, two to the upper, and two to the lower lip; and the wound was further approximated and supported by a hare-lip bandage, made with very fine ribbon instead of thread. On examining the part after removal, it had the firm white bands, and other characters of carcinoma.

After the operation I would not permit him to speak a word, nor attempt to drink, except when I fed him with an elastic gum bottle and tube. Nothing sinister occurred during the treatment; the whole healed by the first intention, and in ten days he was sufficiently restored to leave his house. The glands under the jaw soon subsided, and never again became enlarged. I am happy in being able to add, that I have within the last month, heard from him, and he has continued to enjoy his health since that time. The degree of deformity is far less than could have been expected, and the aperture of the mouth is quite sufficiently large for him to take food without the least difficulty.

The happy termination of this case certainly far exceeded what could, *a priori*, have been expected. To some gentlemen, my conduct in this instance

may appear to merit the charge of temerity, unless they will admit that *Exitus acta probat.* In four cases of less extensive disease of the lower lip, having all the same threatening aspect, I have removed the part with perfect success. In one of these cases, the diseased action appeared to have been first induced by the irritation of a tobacco pipe, as the patient, who was a sailor, was so inveterate a smoker, that he had caused a portion of two of his incisors to be filed away for the convenience of introducing the pipe into his mouth. The disease commenced immediately opposite this opening. In another case the gentleman traced it to a blow he had received on the mouth, which caused a slight circumscribed effusion of blood, which remained indurated and without pain for many months. He had contracted a habit of drawing this portion within his teeth, and very frequently inadvertently bruised it: after a time, ulceration took place, and a very angry looking fungus sprung up, which his medical attendant had attempted to destroy by caustic applications; but these only aggravated the disease, and increased the surrounding hardness.

In one case, in which the whole of the lower lip was removed, the result was unfortunate, as the disease recurred in the sublingual glands, and rapidly destroyed the sufferer. In this case I had formed a new lip, sufficiently deep to restrain the flow of saliva, by separating the integuments from

the front of the lower jaw, and keeping the wounded surfaces apart until the whole had skinned over.

From my own experience, and from witnessing the success of others, I may venture to affirm, that few cases afford greater promise of success than those corroding ulcers, with scirrhous edges, which occur about the lip. The operation is so simple, and the wound so constantly unites by the first intention, that in cases that do not readily yield to local and constitutional treatment, it is far better to resort to it, and often the deformity will be less than when the ulceration heals without any operation. One circumstance may be worth adverting to, both in operating for the removal of a diseased portion of lip, and in the hare-lip operation. It is better to introduce first, the pin that is nearest the edge of the lip, the exact coaptation of the red margin of the lip is thus rendered more certain, and where this is nicely attended to, it is hardly possible, at a slight distance, to perceive that any operation has been performed.

Before concluding this section of the subject, it may be mentioned, in corroboration of my opinion that many of these diseases are produced and kept up by local irritation, that in almost every instance I have witnessed, the disease has occurred either at the angle of the mouth, or the lower lip, which, from its situation and greater mobility, is much more liable to be irritated in every action in which

the mouth is concerned; it is much more readily drawn within the teeth, and when ulceration has taken place, it is exposed to the constant flow of saliva, which, particularly in cold weather, causes excoriation, and thickening in the surrounding integument.

Occasionally, cases occur in which under peculiar states of constitution, the application of stimuli, which have been previously harmless, will produce diseases of a very anomalous nature, which may be subsequently maintained by the locality of the complaint. The following case, with the particulars of which I have been favoured by Mr. Stanley, appears to have been of this description.

"A gentleman aged 19, met with a severe accident, attended with a considerable loss of blood, by which he was brought into a very weak state. Just at the period when he was beginning to recover his strength, he was induced to smoke a segar. Two days after this occurrence, an incrustation, about the size of a six-pence, formed upon each lip, exactly at the part which had been in contact with the segar. These incrustations were soon detached, and beneath them, two sores were discovered, circular and excoriated, and having matter firmly adhering to their surfaces. The sores were painful, and in a few days after their appearance, the absorbent glands under each side of the jaw, swelled, became painful, and suppuration

seemed to be about to take place in them. The general health became much disturbed. Various applications were made to the sores, but without influencing their character. About 5 weeks after their appearance, they spontaneously healed. After the healing of the sores, eruptions, having a papular character, appeared over the whole face and neck. Under the use of alterative doses of blue pill and sarsaparilla, these gradually disappeared; but the disturbance of the health was not removed for a considerable time after the foregoing occurrences.

"No other explanation of the sores upon the lips could be given, than by attributing them to the irritation of the segar. Perhaps, the tobacco acted as a poison to the skin, the susceptibility for this action, being derived from the debilitated state of the system. It may be observed, that he had on former occasions, smoked segars with impunity. The case seems to present an instance of a vegetable poison producing sores that would, under any other circumstances, have been regarded as syphilitic, or at least, as belonging to the pseudosyphilitic form of disease; these sores, irritating the absorbent glands in their neighbourhood, and affecting the system; the latter conclusion seems justified by the appearance of eruptions after the healing of the sores."

On Diseases of the Integuments of the Nose and Face.

The alæ of the nose, and lower margin of the nostril, are occasionally liable to diseases resembling cancer, which are greatly aggravated by any catarrhal affection. I successfully removed a portion of diseased skin from the right ala of the nose, in an old lady, who is alive and well at this present time (nine years since the operation). In this case the arsenical paste had been previously employed, but had failed to remove the disease.

In some instances, the habitual use of snuff will produce a very irritable and suspicious looking disease which will extend over the upper lip. I once saw a corroding ulcer, with surrounding hardness, in this situation, in an elderly gentleman. It was considered of a cancerous nature, and had created the greatest alarm in the mind of the patient. The total abandonment of the practice of taking snuff, combined with the mildest applications, and the keeping a plug in the nostril to prevent the descent of any irritating discharge, soon altered the character of the complaint, which terminated favorably without any operation. Other portions of the integuments of the face, are frequently the seat of intractable ulcers, which may in many instances be traced to local irritation. Thus I have known diseases induced in the neighbourhood of the eye, by the continued application of a morbid secretion

from the meibomian glands, from the constant flow of tears, in obstructions of the nasal duct, and from the rheumy eyes of old people. In two instances of disease occurring at the inner canthus of the eye, I successfully dissected out the morbid portion of skin, and the patients remained permanently well. In one case, the operation was followed by a very severe attack of erysipelas, and matter formed under the occipito frontalis.

Many instances of disease of the integuments of the lower part of the face, may be traced to the irritation of shaving. It is a very common reply to inquiries into the origin of such complaints, that it commenced from a slight wound from a blunt or dirty razor. Each time the operation of shaving is repeated, the wound is aggravated, and receives fresh injury; and, if with a view to obviate this, the beard be suffered to grow, the discharge becomes so matted together with the hair, that it is very difficult to keep the wound clean, and the elasticity of the short bristly beard will generally prevent the close application of any remedy. In such cases it will be found very useful carefully to remove the hair with a small pair of scissars, similar to those employed in the division of the cornea. This will enable us to dress the wound more closely, and will often succeed in removing the complaint. Where, however, the disease remains stationary, or inclined to spread, it will be better to remove the morbid portion, either with the scalpel, the potassa fusa, or

the arsenical paste, as may appear best adapted to the individual case. In one case of this description, the morbid disposition was kept up by the tendency which the hair had to coil up beneath the integument; several very painful pimples were thus formed, which put on a very angry ulcerated appearance. This took place after an oblique cut from a razor, which had probably divided several hairs near their roots, which continued to grow, but could find no exit, as the wound was immediately closed. By carefully extracting each hair, some of which were above half an inch in length, the irritation soon subsided.

Among the irritating causes which may dispose the integuments of the face to diseased action, the greater exposure of this part to all the vicissitudes of climate and weather deserves to be mentioned, and when any such affection has taken place, there is a much greater disposition on the part of the patient to pick and irritate these sores, than any other occurring in more concealed parts of the body. This will frequently be done without any consciousness when the mind is engaged in reading or writing. In all these diseases occurring in the integuments of the face in persons advanced in years, if the character does not improve under proper treatment, it is adviseable to remove the disease, which may be done in a large majority of cases with every prospect of permanent success.

On Diseases of the Tongue.

The next part to which I shall beg to call the attention of the society, which from its situation and office is greatly under the influence of local circumstances, is the tongue. When any morbid action is set up in this part, many things contribute to maintain it. The extreme mobility of that organ, the almost continual use of it in eating, drinking, and speaking, the contact of the teeth which are often irregular and decayed, are quite sufficient to interrupt any efforts to restore a healthy action. It often happens too, that the part is so very tender, that the patient cannot bear to cleanse the mouth and teeth, which soon become incrusted, and from this source alone the complaint will be greatly aggravated, and the discharge rendered fetid and irritating. The continued operation of these causes soon induces a disease which puts on all the alarming characters of carcinoma, for the cure of which, extirpation of the diseased portion by the scalpel, ligature, or actual cautery, has been advocated by different authors; and many successful cases are recorded in which these different plans have been adopted. In looking to the history of many of these cases, considerable doubts arise of their probable nature. The period of life at which many of them occurred, and the frequent success which followed the operations, are alone sufficient to create a reasonable scepticism of their being cases of carcinoma. It is not meant here to call in ques-

tion the propriety of such operations, where the whole of the morbid part can be safely and effectually removed, although it must be acknowledged that such operations are far more formidable than when the lip is the part affected, and are productive of more suffering to the patient. Not unfrequently, however, cases occur in which the disease includes parts which are beyond the reach of any operation. Under such circumstances, it is most fortunate that many of these affections will be found to yield to a proper combination of local, with constitutional treatment; even where the characters of the disease bear a very close analogy to carcinoma. Under the head of local treatment, I would place in the first rank, the removal as much as possible, of all local stimuli, such as the taking away any decayed or projecting tooth, the shielding the tongue from pressure by covering the teeth with wax or soft lint, the *complete privation of the faculty of speech*, the frequent cleansing of the mouth with a stream of water, or any medicated liquor from an elastic gum bottle, instead of gargling or washing the mouth by any muscular effort, the employment of the most mild unirritating food, and, in bad cases, the prohibition from the use of solid food, substituting in its room, milk and strong broths, which may be thrown into the stomach through a tube passed down the æsophagus, and even in some cases, introduced through the nostril. Such a plan of treatment requires much firmness and resolution on the part of the patient: but I can

confidently state, that it will be occasionally followed with success. When there is any enlargement of the glands, it will be right to combine with this the repeated application of leeches under the chin. As local applications to the ulcerated surface, few are more efficacious than a solution of nitrate of silver, or very much diluted nitric acid, in the proportion of three or four drops to the ounce. Occasionally a solution of arsenic is very useful. Any of these may be thrown upon the ulcer with a syringe, which will be found better practice than keeping lint moistened with any lotion, constantly applied to the part *.

In two instances of apparently very malignant diseases of the tongue, I have succeeded in obtaining perfect cures by the plan laid down. A similar practice was pursued in the case of a boy at the Foundling, in whom the disease was of a very peculiar kind. Clusters of very minute semi-transpa-

* This plan of cleansing wounds with a stream of water thrown on the part from an elastic gum-syringe, I have very frequently found extremely useful, not only in ulcers of the tongue, but in any painful ulcerations about the tonsils or fauces, in which cases it frequently happens that the effort of gargling is productive of great pain, and is very insufficient to remove the sloughs, and inspissated sputum, which is often very tenacious and difficult to be got rid of. All that is required, is for the patient to hold his head over a basin, with his mouth open, and by compressing the elastic bottle, he will throw a stream with considerable force on any part of the throat to which he may wish to direct it. This may be readily done by patients in the most enfeebled state.

rent vesicles pervaded the whole thickness of the tongue, occupying nearly one half, and projected considerably, both above and below that organ. The slightest injury caused these to bleed profusely, and in some places the clusters were separated by deep clefts, which discharged a fetid irritating sanies. This disease, which had resisted various plans of treatment, both local and constitutional, gradually yielded to a strict attention to perfect quiet and cleanliness, combined with large doses of hyoscyamus, which was increased to the extent of ʒi of the extract daily. I have employed the same remedy in many cases of ragged irritable ulcers in the tongue, and have been surprised at the influence which it appeared to exert over these affections. In some cases no other remedy has been employed, and its effect has been most marked and unequivocal. I have employed other medicines of the same class, but without any similarly beneficial result. Mercury, in all these cases, if administered in any quantity, seldom fails to aggravate the disease. The application of the pulp of carrots I have known of considerable service in assisting to cleanse irritable ulcers of the tongue, and induce a more healthy disposition. The patient may keep a quantity of it by his side, and frequently change it. The retaining a portion of it in his mouth, will have the further good effect of restraining him from speaking.

On Diseases of the Prepuce.

There is, perhaps, no instance, which affords a better illustration of the deleterious influence of the constant application of local stimulants, than the peculiar affection which occurs in the prepuce of old people. It generally happens that these complaints are not at first attended to by persons advanced in years, who are, from that circumstance, unsuspicious of a disease, which at an earlier period of life might have awakened their attention. When the disease is far advanced, it sometimes includes the glans penis, or becomes so connected with it round the corona glandis, as to render it necessary to remove that body, together with the diseased integument.

The following appears to be the history and progress of this affection, which has been generally considered as cancer of the penis. It invariably occurs, as far as my observation goes, in persons with elongated foreskins. A want of proper attention to cleanliness in removing the secretion from behind the corona glandis, will often lay the foundation of this complaint. The prepuce, from the confinement of this irritating matter, is excoriated, and what at an earlier period of life would be called gonorrhœa præputii is the consequence, the part becomes œdematous, the frænum thickened, and it is soon impracticable to withdraw the foreskin. Phymosis being thus established, the frequent passage of the

urine over the inflamed skin, causes it to ulcerate, and the continual application of so stimulating a fluid, produces much surrounding swelling and induration. Not unfrequently, the natural opening in the prepuce becomes nearly obliterated, and the urine dribbles away through several ulcerated apertures. An intractable disease is thus established, for which, when it has attained this height, the knife is the only remedy. In other instances the disease commences nearer to the extremity of the prepuce, which in old persons, from the diminished bulk of the body of the penis, becomes more elongated. In such cases it probably originates in their neglecting to withdraw the foreskin in making water. When we consider the greater frequency, in advanced life, with which this operation is performed, the length of time it occupies, and the incomplete manner in which it is executed, often leaving a portion in the urethra, which gradually dribbles away; we shall understand how constantly the foreskin is exposed to this irritating fluid, rendered more acrid in many cases, by long detention in the bladder, from disease in the prostate, or other causes, which so frequently obtain during the latter period of life. That such a cause is fully sufficient to produce a most serious disease, I am satisfied, from having more than once witnessed the entire subsidence of inflammation and hardness, after the removal of the irritation, by the most simple and obvious plan of treatment.

It is hardly necessary for me to state, that when any disease in the prepuce exists, whether originating in the secretion from the corona glandis, or the almost constant passage of the urine, it will be greatly aggravated by any disease in the urethra. The influence of stricture of the urethra, in producing verrucæ, and many other morbid affections of the prepuce, is now so generally known and admitted, that it is unnecessary here to dwell upon it.

I have stated that when disease has far advanced, and extensive ulceration has taken place, the removal of the whole indurated mass is the only remedy, and this operation may be resorted to even when the characters of the complaint have assumed a very malignant aspect, with confident expectation of success. In three instances in persons much advanced in life, in which I had opportunities of seeing the patients for many years subsequent to the operations, the complaint never returned. Two of them died of gradual decay, being, at the time of the operation, more than eighty years of age, and one still survives.

If taken at an earlier period, the disease is perfectly remediable by removing the exciting causes. The greatest attention to cleanliness is the first requisite, and for this purpose, an elastic gum syringe, with a blunted pipe, should be frequently employed to wash away the secretion from behind the corona glandis, and to convey any medicated

lotions to correct the morbid action which has been excited. Where phymosis is quite established, and the opening is much contracted, an elastic gum catheter should be introduced, and if no disease in the urethra or prostate gland prohibit the practice, it should be retained in the bladder. The irritation from the constant flow of the urine, will be thus effectually prevented; and, generally speaking, the swelling and hardness will subside sufficiently to enable the patient to withdraw the skin to admit of the exit of the urine without passing over the prepuce. The introduction of a small portion of sponge will often assist much in dilating the contracted orifice; but where these means do not succeed, it will be right in some cases, to divide the prepuce, and expose the glans penis. I have known this operation succeed perfectly in a case which had been condemned to amputation. No operation should, however, be attempted, until the soothing plan of treatment has been tried, and the part brought into as quiet a state as possible; nor until the disease in the urethra, if any exist, be remedied as far as may be.

The removal of the whole penis is the operation which is generally resorted to in these cases, but from the examinations I have made of the parts after amputation, I much doubt whether the removal of the diseased integument would not, in the majority of cases, be equally efficacious. When we look to the period of life at which this disease usually occurs, it would be a matter of little impor-

tance whether a portion of the body of the penis were removed or not, and the quantum of pain is probably nearly the same; but this is a circumstance of great consequence with reference to the after treatment, as great inconvenience is often experienced from the powerful contraction which takes place in the cicatrix, at the extremity of the urethra. This may be obviated, in some measure, by a free removal of integument at the operation, and the introduction of a small portion of sponge-tent at bed time, after the wound is healed: this plan must be long persevered in, as the disposition to contraction will remain for many months. It has occurred to me that possibly this tendency might be prevented by slitting open the urethra about a quarter of an inch after the circular incision had been made, and preventing the cut edges from coming in contact during the healing. Any contraction which would then take place in the cicatrix, where the integuments were united with the urethra, would rather have a tendency to evert the edges of that canal, and thus keep it constantly patent. I have never had an opportunity of submitting this plan to the test of experiment, and cannot, therefore, speak with any confidence of its success.

For the reasons, then, above stated, amputation of the body of the penis, should not, on light grounds, be undertaken; and only in cases where the induration has extended itself to the corpora cavernosa, or glans penis, or where the

state of the patient's constitution renders it adviseable. With the views I have been led to entertain of the nature and origin of these affections, I should, with great confidence, rely on the removal of the diseased integument, in those cases which did not subside under the plan of treatment already laid down. Even where the inguinal glands were enlarged, I should not be disposed to abandon the case as hopeless, as they will often subside on removing the exciting cause.

Another, and not an uncommon effect of local irritation, is the production of new growths: this most frequently occurs from the secreting surfaces in the neighbourhood of the genital organs, and anus. The enormous productions of verrucæ and condylomata which so frequently occur from neglected discharges from the vagina, may be adduced as instances. These will generally subside by great attention to cleanliness, and arresting the irritating discharge. When any diseased growth occurs in the immediate vicinity of the anus, the diurnal evacuations from that viscus, tend much to aggravate the disease. I once removed an enormous cauliflower excrescence, which was attached to the whole circumference of the anus. The tumor was divided by several deep clefts, and it was very difficult to ascertain the entrance to the gut. The disease had been considered of an incurable malignant nature, and the patient was much reduced by the profuse discharge, and the severe pain which she constantly endured. On carefully examining

it, I found that I could just reach with the finger within the verge of the anus, the surface of which felt smooth and healthy. This induced me to remove the whole tumor with the scalpel; profuse hemorrhage took place from a very large vessel which had retracted within the verge of the anus, and rapidly distended the rectum with blood, which was forcibly propelled in the form of a large coagulum. This took place twice before the vessel could be secured, in which I was greatly assisted by Assalini's double tenaculum. The case terminated favorably, but great difficulty was experienced in dilating the contraction which took place at the orifice of the anus, in consequence of the wound having included the whole circumference of that opening. Should such a case occur to me again, I should certainly only remove one part of the excrescence, to allow of the more ready evacuation of the fœces: and I should expect that the remaining portion would subside under suitable applications, and the relief which would be obtained by the removal of a part. The above-mentioned case was very instructive in showing the necessity of great caution in removing integuments at the verge of the anus. The case was complicated with stricture in the rectum, which was probably the cause of the excrescence.

Before concluding these observations, I wish most distinctly to state, that in referring the origin and continuance of disease in many of the foregoing

cases, to the action of local stimulants, I by no means wish to imply that there may not be a constitutional predisposition to disease; nor can it be denied that truly cancerous affections will exist, independently of any local cause. My wish has been to direct the attention of practitioners to certain local circumstances, which, in many instances, may lay the foundation for disease, and the continual operation of which, if unattended to, will not fail to counteract not only the reparative efforts of nature, but all the remedial means of art. But, in directing our views to the local treatment of these cases, we ought on no account to neglect the state of the constitution, which will always participate in any considerable local malady, and when once disturbed will re-act with much deleterious influence on the original affection.

The soothing treatment which has been recommended to be adopted in these local diseases, may possibly appear very inadequate to counteract the morbid action which has been induced. In some cases, it undoubtedly will be so, yet in many others I feel convinced that it will succeed, and no possible harm can ever arise from its judicious employment; as in cases which may subsequently require to be extirpated, it is most desirable to allay irritation by every possible means, and none is so powerful as a state approaching to uninterrupted rest. Do we not daily witness the beneficial influence of rest in the most formidable diseases of the joints

and vertebræ? and the happiest results from a total removal of the stimulus of light, in inflammatory diseases of the eye? On the other hand, what fatal terminations are the consequence of common inflammation of the mucous membrane of the trachea and lungs, from the impossibility of allowing these parts to be in a state even of temporary rest. Perhaps in no instance is the beneficial effect of repose more triumphantly evinced than after the operation of tracheotomy for the relief of acute inflammation of the larynx, where the disease has not extended itself down the trachea. With the same curative intention of obtaining a total respite from labour, and the removal of local stimulants, I would propose, in obstinate cases of disease in the urethra, in very irritable constitutions, to puncture the bladder above the pubes. A double object would be thus obtained; the urethra would be left in a state of repose, to recover from the constant irritation to which it had been subjected; and having secured a retreat for the urine, we might subsequently, with impunity, employ more active measures, in attempting the restoration of the natural passage.

28, *George Street,*
Hanover Square.

ON CHIMNEY SWEEPERS' CANCER.

By H. EARLE, Esq. F.R.S.

ASSISTANT SURGEON TO ST. BARTHOLOMEW'S, AND SURGEON TO THE FOUNDLING HOSPITAL.

Read Jan. 14, 1823.

AT the last meeting I had the honor of submitting to the consideration of the Society some observations on the effect of local irritation in the production of diseases resembling cancer.—I propose this evening to offer a few remarks on a disease of a malignant nature, which is evidently called into action by the application of a peculiar stimulus.

The disease in question has been termed the soot-wart, or chimney sweepers' cancer; a short history and description of which was published by Mr. Pott, with his usual accuracy and force of language. Having been induced some years since to investigate the nature of the complaint on rather an extensive scale; and having, in the course of my enquiry, been led to form some exceptions to the rules laid down by Mr. Pott, which are important, both with respect to the treatment and the prognosis, it

may not be uninteresting to state briefly the result of my observations.

The disease in question is invariably produced by the irritation of the soot applied to the rugæ of the skin. The characters of the complaint are peculiar, commencing in a warty excrescence, which in some cases will remain nearly stationary for several months, or even years. After a time, the excrescence discharges a thin acrimonious ichor, which excoriates the surrounding skin. Ulceration now takes place in the centre, and the edges of the wound become everted, and throw out a luxuriant growth, with schirrous hardness, which discharges a very fetid irritating matter. The most common situation for this complaint is the lower part of the scrotum; but this rule is not without exceptions: a remarkable instance of its occurrence at the wrist of a gardener, who was every spring employed to distribute soot for the destruction of slugs, is related by my late father in the last edition of Pott's works. Some instances have also occurred where the disease has taken place in the integuments of the face. As the disease advances, the parts immediately contiguous become affected, it spreads downwards to the perineum, and if not arrested will include the whole scrotum; at the same time, it not unfrequently extends itself to one or both testicles. When the testicle is first affected, it becomes firmly connected with the diseased scrotum; it enlarges, and be-

comes greatly indurated; ulceration, and sometimes sloughing, then take place, leaving a deep excavated ulcer, that penetrates into the body of the testis, which does not appear disposed to the formation of fungous growth, similar to what occurs when the scrotum is the seat of disease. The same observation applies when the complaint has extended itself to the inguinal glands; its progress in glandular structures appears to be more rapidly destructive without the slightest effort at reparation. The disease, in every instance that I have seen, except one, extended itself to the parts immediately contiguous. The inguinal glands are often enlarged, but they will generally subside on the removal of the diseased scrotum; clearly proving that the disease is not commonly communicated in the course of the absorbents. This is a very important feature in the complaint, and one which most materially influences the prognosis and treatment. I know but one exception to this rule where a bubo formed, which suppurated, and the sore assumed the same characters as the primary affection in the scrotum. Even where the testicle is affected, the disease is confined, for a time, to that gland, but it subsequently extends itself up the spermatic chord, into the cavity of the abdomen, where it proves rapidly destructive. Not only is the discharge from the sore very fetid, but the perspiration from the whole body, which is generally copious, has a very peculiar ammoniacal odour, which cannot be mistaken when once recognised. The

countenance has a peculiar leaden hue, and the general health is materially affected by the severity of the pain, the want of rest, and the constitution having to contend with a disease which it is incapable of throwing off. Such are the history and usual characters of this complaint. Fortunately it is one of comparatively rare occurrence, when it is considered how many are exposed to the application of the poison—if I may be allowed to use so strong an expression. The infrequency of its occurrence admits of being explained on two principles.—In the first place, it very rarely attacks persons under the age of thirty, who form a very small proportion of the number engaged in the business. The greater proportion of cases which I have seen, have occured between 30 and 40: I have seen three instances between 20 and 30, and only one at the age of puberty. A solitary instance is recorded by my father where it occurred in an infant under 8, but I have never met with any similar case. This circumstance may perhaps afford some consolation to those benevolent gentlemen, who, in commiseration of the hard fate of the children engaged in this vocation, have, in vain, endeavoured to call in the powerful aid of legislative authority in their behalf. As the liability to this peculiar disease formed one principal ground for the application to Parliament, it may be satisfactory to know that the children who form the principal part of those engaged in the trade, are not liable to this affection. Unfortunately, even if it were possible to substitute machinery in every instance, although the first

stage of degradation and misery might be got rid of, yet the master sweeps, and those who were engaged in the removal of the soot, would still be liable to this destructive malady.

The rare occurrence of this complaint, may be referred to another cause, namely; there are strong reasons for presuming that a constitutional predisposition is required, which renders the individual susceptible of the action of the soot. If this was not the case, and if there was any thing of a very acrimonious nature in soot, would it not more frequently affect the children, whose skins are far more delicate, and who are much more exposed to its constant application? Among those who have been affected, and who have fallen under my observation, several had been employed in the trade for above twenty years before they became affected, and it is more reasonable to conclude that some alteration had taken place in their constitutions which rendered them susceptible of the irritation, than that it was the immediate result of any peculiar quality in the soot. This opinion is much confirmed by instances in which different branches of the same family, have been subject to the disease at a particular period of their lives. In some instances, two or three generations have fallen victims to the ravages of this disease; for the business is so lucrative that they are unwilling to abandon it.

Admitting, then, that a certain state of constitu-

tion is necessary for the developement of this disease, the important question arises, how far is it remediable by the aid of medicine or surgery? As far as my observation goes, no topical applications or internal remedies, have the slightest influence over the disease. The scalpel is the only resource, and that may be resorted to with the most confident expectation of success, provided the whole of the diseased mass can be removed. Even where the inguinal glands are enlarged, this ought to be attempted; as I have before stated, that the disease commonly spreads to parts immediately contiguous, and the enlarged glands will often subside. Where the testicle is affected, provided the spermatic chord, has not participated, it will be right to give the patient the chance of recovery rather than abandon him to a miserable and painful death. It is true that the experience of Mr. Pott, induced him to believe, that when the testicle was affected it was too late to attempt any operation: yet in two instances I have known it succeed, and have traced the individuals for several years, subsequent to the operations.

It may appear rather an anomaly to affirm that a certain state of constitution is required, for the production of this disease, and at the same time to advocate its locality; yet such are the conclusions which numerous facts appear to warrant, and I feel quite confident of being able to eradicate the complaint, by a complete removal of the diseased portion, and the subsequent abandonment of the

occupation of a sweep. As the disease is sometimes rapid in its progress, no time should be lost in making useless trials of remedies, but the operation should be at once, and extensively performed. I shall conclude with the narrative of two interesting cases, which powerfully illustrate the positions which have been advanced.

CASE I.

Edward Kelly, aged 30, had been a chimney sweep fourteen years, when he first perceived a wart on his scrotum which remained nearly stationary for seven years, when it became troublesome, and he picked it off. Ulceration soon took place, and it began to discharge a thin irritating sanies. A fungus shot up which increased to the size of a shilling, when he applied for surgical assistance, and was admitted into an hospital, where various escarotics, cicuta, and different remedies were tried in vain, and he was discharged in a worse state than when he was admitted. He continued to get progressively worse for seven months, when he was admitted into St. Bartholomew's Hospital in March, 1808, at which time there was a large fungous excrescence, with hard thickened edges, which nearly covered the whole scrotum, and extended the entire length of the perineum to the verge of the anus, this discharged a profuse bloody sanies, which excoriated the surrounding skin. As far as could be ascertained, the testicles were not

included in the disease, and the spermatic chords were healthy. The glands in the right groin were considerably enlarged and painful. The patient was neither able to walk or sit, and the pain was so severe that he could procure no rest. He had a very ghastly countenance, and his perspiration had a very strong ammoniacal odour. Although, at this advanced stage of the disease, no very confident hopes of success could be entertained, yet an operation was proposed, and readily assented to by the patient. The severity of the operation, and probability of failure were stated to him, but he willingly embraced the hope of temporary relief. On the 28th of March, the operation was performed by my father, in the following manner. The patient was secured as in the operation for lithotomy, an incision was carried round the diseased skin in the perinæum, quite to the verge of the anus, the whole was then dissected off the urethra. The patient's legs were now loosed and the entire scrotum was removed, leaving both testicles perfectly bare. The patient sustained the operation with great fortitude; for a few days he experienced some difficulty in passing his urine, which was drawn off for about a week. Some degree of hernia humoralis took place from the exposure of the testes. The tunica vaginalis became coated with coagulable lymph, and subsequently granulated and cicatrized without any sinister occurrence during the whole treatment. He was discharged perfectly well on the 20th of May, and continued

so for several years, during which I was occasionally in the habit of seeing him. Had he ever experienced the slightest return, there is no doubt that he would have applied to me for assistance. The necessity for quitting his employment was strongly urged, which he immediately complied with. I was anxious to learn if he experienced any diminution in his venereal powers, in consequence of the adhesions which the testicles had formed, as perfect freedom of motion has been supposed to be essential to the function of these organs; and further, it has been stated, that when the testes have not descended, impotence is the consequence. He was a married man, and assured me, that he found no difference whatever, in the intercourse with his wife.

CASE II.

John Ashmore, aged 35, had been a sweep above twenty years, when he first perceived a wart on his scrotum, which he repeatedly picked off; this remained nearly stationary for above a twelvemonth, when ulceration took place, which speedily affected the right testicle. He was admitted into St. Bartholomew's Hospital, April 8th, 1808. At that time there was a large deep ulcer, extending into the body of the right testis, round which there was considerable hard fungous growth from the edges of the skin, occupying about one half of the scrotum.

The spermatic chord felt of a natural texture, but the glands in the groin were much enlarged. The character of the discharge and perspiration were the same as in Kelly's case. The diseased integument was very freely removed, and the testicle extirpated close to the abdominal ring. Nothing particular occurred during the after-treatment, and he was discharged well in six weeks. On questioning this man respecting his complaint, and asking him if many of his trade had been affected in a similar way, he told me that his grandfather, father, and one brother, had all perished from the effects of the disease. I urged him in the strongest language to quit his employment, but he paid no attention to my advice. In about 15 months from this time, I was going round the hospital, and found my old patient under the care of Sir C. Blicke. He was very penitent for having neglected to follow my instructions, in consequence of which he was then suffering from a similar complaint on the left side of the scrotum, which extended to the root of the penis, part of which was included in the disease. As the former operation had been perfectly successful, and there were no symptoms of any return on that side, either in the glands, or spermatic chord, it was determined to attempt the removal of the disease a second time. The operation was performed by Sir C. B., and it was found necessary to remove a portion of the urethra. At the time of the operation, it was apparent that a small portion of skin was left, which firmly adhered to the left corpus caver-

nosum penis, a part of which was considerably indurated. The wound healed rapidly, and he left the hospital in a month. But in about four months from this time, he returned with the same affection, which had commenced, very shortly after he quitted the hospital, at the root of the penis, and this time it was not preceded by any warty excrescence, but by inflammation and vesication, which broke, and rapidly ulcerated. He had not been exposed to any fresh infection during the interval; and this circumstance, coupled with the suspicion of the diseased portion not having been completely removed, its recurrence at the suspected part, and its commencing in a totally different manner, confirmed me in the opinion, that the latter affection was a relapse, and not any fresh complaint. The disease at the time had made most rapid progress; and had extended itself to the groin, where it committed dreadful ravages, eating its way into the cavity of the abdomen, and destroying the patient after most excruciating agonies. I consider this case as particularly instructive in illustrating the nature of this disease. In the first place, the patient had for many years been exposed to soot with perfect impunity, and began to suffer about the same period of life that his relations had fallen victims to the same complaint. Had he abandoned his trade after the first operation, there is every reason to suppose that he would have remained well, notwithstanding the disease had invaded the testicle. By exposing himself again to the same

irritating cause, the disease recurred, and, unfortunately, from an over anxiety to preserve the penis, the whole mass of disease was not completely eradicated, and when he applied a third time for assistance, it was too late to attempt any operation.

28, George Street,
Hanover Square.

ON THE

DESTRUCTION

OF

THE FŒTAL BRAIN.

By Mr. HAMMOND.

COMMUNICATED

By Mr. TRAVERS.

Read Jan. 14, 1823.

A YOUNG woman of the name of Atfield having an unusually narrow pelvis could not expel the fœtus by natural means; and it became necessary to diminish the size of its head.

An opening was made in the skull near the fontanelle, and a portion of parietal bone was removed; three fingers were introduced into the brain of the fœtus, the cerebrum was completely broken down, and about two ounces of brain taken out: the head and the whole of the fœtus were then quickly extracted. The child immediately cried heartily, and breathed in a perfectly healthy manner, and with the usual apparent strength. It bled considerably from the wound in the head; a dossil of lint was applied, and kept on by adhesive plaister. This seemed to moderate, but not to stop the hemor-

rhage; the child passed fæces and urine, and for twelve hours the functions of life seemed to be carried on in the usual and healthy manner; the child frequently crying loudly. After that time it became weaker, cried more feebly, looked very pale, and seemed gradually sinking; for ten hours it continued in this state, during the last two it was slightly convulsed. The bleeding from the wound though not violent, never ceased, and the child appeared to die more immediately from the hemorrhage.

On examining the brain after death, I found the dura mater considerably torn, the cerebrum throughout both hemispheres torn and broken down, so as to appear a mere mass without organization; where the ventricles should have been was filled by clotted blood. The cerebellum, medulla oblongata, and spinal marrow were not injured. The child lived forty-six hours.

This case may perhaps be useful in a practical point of view, as it tends to show that the removal of a part, and the destruction of the whole cerebrum, does not insure death to the fœtus; and in such cases, where the head must be opened, it would be better to divide the medulla oblongata or the spinal chord; for the mother, who is generally prepared for the operation by the assurance that her child is already dead, suffers considerable pain on finding it born with life, but without brains.

A CASE OF

BRONCHOCELE.

By HENRY SHUCKBURGH ROOTS, M.D.

PHYSICIAN TO THE CAREY STREET PUBLIC DISPENSARY, AND TO THE ST. PANCRAS INFIRMARY.

Read Dec. 10, 1822.

I AM induced to offer the following case to the notice of the Medical and Chirurgical Society, in the hope that it may not prove altogether unworthy of their attention, illustrating, as it does, the advantage to be obtained from the use of Iodine, as a remedy in the cure of Bronchocele.

In the summer of the year 1820, being resident during a few weeks in the country, I was consulted by the friends of a young lady, relative to a tumor in her neck, of which the following are the particulars.

Miss ——, ætat. 19, tall of stature, with light blue eyes, fair hair, and transparent skin, and inheriting from her father a disposition to scrofula, has had for the last two years an enlargement of

the thyroid gland, which within the last three or four months has increased considerably, and at times occasions her a good deal of uneasiness, particularly when bending the chin towards the sternum, or in singing, and laughing, or upon using any considerable exertion. Both lobes of the gland are enlarged, the left rather more than the right, and upon the whole the size of the tumor may be compared to that of a moderate orange, flattened.

I directed eight leeches to be applied to the tumor twice a week, and prescribed fifteen grains of the carbonate of soda to be taken three times a day. My patient persisted in the application of the leeches, and in the use of the soda for three months, without any material alteration in the size of the tumor. At this time I again saw her, and finding her unwilling to persevere in so frequent an use of the leeches, I directed her to take a drachm of the burnt sponge three times a day, and to apply the leeches once in a fortnight. This she adhered to also for about three months, and upon my visiting her at that period, I found the tumor exactly the same in size, as when I first saw it. Wishing then to try the effect of friction, I ordered her some of the linimentum saponis, and directed a small quantity to be rubbed gently into the tumor for a quarter of an hour at each time night and morning, and at the same time to continue the use of the burnt sponge. This plan she

readily submitted to, and it was steadily adopted for three or four months, but without at all diminishing the size of the tumor.

My patient now began to be tired of attempting any remedy, and I advised her to do nothing more than once in three or four weeks apply eight or ten leeches, hinting at the same time, that if it should at any time show a disposition to increase materially, she might have recourse to the passing of a seton through the tumor, as recommended by Dr. Quadri; though under the present circumstances of her case, I did not feel myself warranted in advising her then to undergo the operation.

Having been present at a meeting of this society last winter, when Dr. Roget read a letter from Dr. Coindet relative to the cure of some cases of Bronchocele by the use of Iodine, I determined to try it on the above patient; and in the latter part of the month of January of the present year, the tumor being somewhat increased in size, she began the use of it in the following proportions.—Potassæ Hydriodat. gr. xxxiv. Ceræ albæ ʒij. Adipis Suillæ ℥ss M. the size of a garden bean, to be rubbed into the tumor night and morning, for ten minutes at each time.

She continued the use of this ointment for five weeks, during which time no pain had been produced in the tumor by its application, and at this

time I visited her, and upon measuring her neck, (I having measured it accurately, prior to the use of the Iodine,) I found it had diminished in its circumference three quarters of an inch. I then ordered her to persevere in the use of the ointment, increasing the proportion of Iodine from thirty-four, to forty-four grains, and directed her to abstain from its use, in case any inflammation should arise in the tumor. After using this ointment four or five times, the tumor became tense and painful, and the integuments inflamed; the use of the ointment was accordingly omitted, eight leeches were applied to the tumor, and a dose of the sulphate of magnesia was given to her: the inflammation was speedily abated, and in a week she resumed the use of the ointment; and as no pain was again produced, during its use, for several weeks, I again increased the proportion of Iodine to fifty grains, in which proportion she continued to use it, without any pain, until the latter part of July, when I had the satisfaction of finding, that the tumor on the left side had entirely disappeared, whilst that on the right side, was also very materially lessened.

Wishing then to try the internal exhibition of the medicine in conjunction with the external, I directed her to continue the use of the ointment, increasing the proportion of Iodine to fifty-six grains, and also to take twenty drops of the tincture of Iodine three times a day, in a glass of water.

As my patient resided some miles from London, I was prevented from seeing her again until the first of the present month, when I had the pleasure of finding her perfectly well, the tumor on both sides having entirely disappeared. She was unable to take the Iodine internally, so often as three times a day, in consequence of its having produced sickness, and pain in the stomach and intestines; but she had continued to take it twice a day for about six weeks, and had taken it then once a day until I saw her, although she had discontinued the use of the ointment for more than a month, as the swelling had entirely subsided.

I am well aware that too much stress ought not to be laid on the successful issue of a solitary case, but as it is confirmatory of others similarly and successfully treated, I cannot but consider that Iodine is a most valuable remedy in a disease where so many different remedies have been tried, and found useless; particularly, as I have at this time a patient under my care suffering from a very considerable bronchocele, but which has very materially diminished under the use of this medicine, the result of which case I shall, at some future period, have the honor of relating to the Society.

Grenville Street, Brunswick Square,
Dec. 3, 1822.

ON THE

DILATATION OF THE MALE URETHRA

BY INFLATION,

FOR

THE EXTRACTION OF CALCULI

FROM THE BLADDER,

AS PRACTISED IN EGYPT, NEAR 250 YEARS AGO.

By ROBERT MASTERS KERRISON, M.D.

Read Jan. 7, 1823.

THE dilatation of the female urethra has become a subject of great interest, particularly since the judicious use of sponge-tent by Mr. Thomas, as communicated in the First Volume of the Transactions of this Society; its distension by air inclosed in a tube, formed by the intestine of an animal, had been employed by Mr. Bromfield, forty years ago; but, for some reason, which does not appear, it had not become established as a practice, and the successful adoption of the dilator, described in the last Volume of the Transactions, by Sir Astley Cooper, seems likely to supersede every other method.

It may, therefore, not be uninteresting to call

to remembrance a mode of dilating the *male urethra by inflation*, and of extracting calculi from the bladder, near two hundred and fifty years ago in Egypt as described by Prosper Alpinus, in his book De Medicinâ Ægyptiorum. It exhibits great ingenuity of contrivance, and, in a climate where the muscular fabric of the body is habitually more relaxed, and all its parts more susceptible of distension, than in this northern country, it is not improbable, that some benefit was occasionally derived from the practice; I think, at least, that this is a fair inference, when we consider the defective knowledge of anatomy possessed by the inhabitants of Egypt in the middle ages and up to the period alluded to, and when we recollect the severity of the operation of lithotomy, as described by Albucasis and other Arabian surgeons, whose writings were a model for the best informed native practitioners in Egypt.

The period at which this distension of the urethra by inflation was first employed, cannot be easily defined. I have met with no allusion to it in the writings of the early Greeks and Romans; nor do Rhazes, Albucasis, Alzarhavius, or Avicenna, notice it. I am inclined to believe, therefore, that the practice originated with some bold surgeon of the Arabian school, and had never been recorded; or at least, never printed in an European language prior to the year 1591; because, at the time Alpinus wrote, nearly the whole of the medi-

cal and surgical writings of the ancients, and Latin translations of the Arabians, had been printed at Venice, or in other parts of Italy. They were in the hands of every professor in the Italian Universities, so that it is not likely, that any allusion to the means described by Alpinus was to be found in their works, or this manner of dilating the male urethra would not have been noticed by him as a novelty, and recommended for adoption.

Prosper Alpinus left Italy in 1580, as physician to the Venetian consul in Egypt, and lived at Cairo for three years. His book De Medicinâ Ægyptiorum, was first published at Venice in 1591. It is in the form of a dialogue between himself and his friend Melchior Guilandinus.

The fourteenth chapter of the third book is chiefly concerning the extraction of a calculus from the bladder of a male subject, without an incision, and begins thus:

"GUILANDINUS. Optarim priusquam de aliis sermonem haberes, ut modum, quo audio, Ægyptios lapides e vesica absque ulla incisione extrahere, nunc mihi explicares, summæ enim utilitati hujus actionis cognitionem nostratibus medicis fore existimo, avide igitur id, quonam modo se habeat, audire expecto.

"ALPINUS. Certe hic modus extrahendi lapides

e vesica valde utilis est, eo quod nulla incisione operetur. Extrahunt lapides e vesica colem in primis vento replentes, atque cum eo os etiam vesicæ dilatantes, atque laxantes, ut os vesicæ lapis facile meare possit, colisque dilatatum et ampliatum meatum, ex quo ipsos lapides vento subreptos foras extrahunt, ipso continuo toto violenter evocato.

"GUILANDINUS. Haud probe intellexi quid dixeris, usque adeo obscura oratione usus es. Duo tamen mihi videris dixisse, quorum alterum est, illiusce regionis medicos, lapides e vesica extrahere volentes, in primis colis vesicæque meatum vento laxare ac dilatare, per quem commode lapides exire possunt, atque eosdem lapides vento eodem foras educi, an non hæc dixisti?

"ALPINUS. Plane eadem; sed quid te dubii cœpit?

"GUILANDINUS. Quoniam vix credere possum os vesicæ, colisque meatum tantum dilatari ac ampliari posse, ut magni lapides in vesica contenti, qui magnæ nucis instar sæpe cernuntur, commode exire queant: ex quo dubia fit apud me ea lapidum eductio, quo nam pacto ita possit administrari, maxime cum tu etiam affirmaveris, eos vento subrepi, forasque educi, quod mihi haud fieri posse videtur.

"ALPINUS. Utrumque verum esse cognosces,

neque omnino a veritate id alienum putaveris, os vesicæ, colemque, eo modo dilatari posse, quando nervosa, ac pelliculosa substantia illi meatus constent. Admirandum magis existimare debemus, uteri os in mulieribus nervosum durum, atque ita angustum, tempore partus tantum ampliari ac augeri, ut fœtus per ipsum exeat, atque foras propellatur. Unum hoc scio, me colis meatum ita dilatatum inspexisse, ut per eum facile magna avellana transiisset. At utilius erit, ut nunc modum ostendam, quo ad extrahendum lapidem ii uti soleant.

"GUILANDINUS. Hac eadem de causa apertis auribus tuum hunc sermonem expecto.

"ALPINUS. Eo tempore, quo ego in Ægypto moram faciebam, Arabs quidam, Haly vocatus, ad extrahendos lapides sine incisione celeberrimus erat, quem ego sane cuidam duci Turcarum, Horam Bei vocato, multos lapides extrahisse vidi. Quo in opere absolvendo ille ligneam cannulam accipiebat, longitudine octo digitorum, et latitudine digiti pollicis*, quam colis canali admovebat, fortiterque insufflabat, atque ne flatus ad interiora perveniret, altera manu extremum pudendi perstringebat, foramen deinde cannulam claudebat, ut virgam canalis intumesceret, et latior fieret, ac appareret. Quo facto minister digito in ano posito, lapidem

* There is no plate of the instrument, nor any description of the size of the perforation of the canula; nor is it said whether the tube was cylindrical or conical.

paulatim ad canalem virgæ, atque in ejus extremum deducebat. Qui ubi præputio lapidem appropinquasse sentiebat, cannulam a virgæ canali fortiter impetuque amovebat, ut magna dexteritate lapis ad nuclei olivæ magnitudinem fuerit extractus, et ego interfui huic duci Turcarum, et postea duobus item ludeis, quorum alter puer erat, cui octo lapillos extraxit, et alter adultus, cui extraxit lapidem ad magnæ olivæ magnitudinem. Hicque est extrahendi lapidem e vesica modus, quo utebatur ille medicus Arabs. Audivi tamen alios etiam ibi esse, qui alio etiam modo lapidem extrahebant, quem modum nunquam ab aliquo quandiu Cayrum habitaverim potui cognoscere."

In a subsequent part of the same chapter, Prosper Alpinus says, that when he was at Genoa, some time after his return from Egypt, and looking over these manuscripts, which must have been prior to 1591, he received a letter from his friend Octavius Roveretus, who succeeded him as Physician to the Venetian consul in Egypt, describing a mode of operating for the extraction of a calculus from the bladder, by another Arab, whose name was Christianus Sajeticus, varying in some respects from that he has described.

It consists in the introduction of flexible tubes, beginning with the smallest, inflating the urethra and bladder, then introducing larger, and proceeding thus with three or four sizes, until the neck of

the bladder and the urethra have been sufficiently dilated to admit the calculus.

The largest tube being still in the bladder, the operator passes a finger into the rectum, and endeavours to press the calculus into its lower orifice; when he has so done, he applies his mouth to the other extremity of the canula, and draws in breath with the greatest possible effort.

In the case referred to by Roveretus, the calculus was broken, but he recommends the practice to be adopted, and intimates, that a more successful result might have occurred to an operator of greater skill and judgement. See pages 225 and 226*.

Fabricius Hildanus also recommended the inflation of the *male urethra*, as will be seen by the following instructions for the extraction of a calculus from it; but we should bear in mind that Hildanus's account was published above forty years after the return of Alpinus from Egypt, and thirty-five years after the publication in 1591; and, although Hildanus makes no allusion to the inflation of the urethra having been *previously* described, he must have known the fact, because he has given a long list of authors, whose writings he had perused and the name of Prosper Alpinus is amongst them.

After advising the urethra to be filled with oil of

* Nothing is said about the composition of these elastic tubes.

almonds by a syringe, and the perinæum fomented during half an hour, Hildanus says, that the surgeon is to hold the penis near the glans, firmly, with the left hand, whilst he passes a canula down the urethra, until it comes into contact with the calculus.

When the urethra has become dilated by the surgeon blowing gently and gradually through the canula, he is to propel the calculus with the forefinger of his left hand. If he should not succeed in the first or second attempt, he is not to desist, but to apply the canula to his mouth again, and blow gently, to avoid giving pain: for which reason, says Hildanus, it is necessary that the operator should not be a fifer, a quack, an ignorant mountebank, or a drunkard, but a discreet and experienced surgeon.

He adverts to the utility of dilating the *male urethra* mechanically, and of extracting a calculus from it, by passing the dilator through a straight canula, when the stone is between the external orifice of the urethra and the perinæum *; but he employed a pair of thin, round, and very long forceps, when the calculus was impacted at or beyond the perinæum†.

* A figure of this dilator will be found at page 755, of Hildanus's book.—The Frankfort edition of 1682.

† These forceps were invented by Marianus Sanctus, an Italian Lithotomist, and are described and illustrated by a wood-cut in a

The manner of extracting a calculus from the bladder, described by Alpinus, is not proposed to the enlightened members of this society for imitation in all its parts; it is merely noticed as a point of early surgical practice, which seems to have been overlooked, or forgotten, and is now submitted for the consideration of the profession, at a period, when the anatomy of the parts is better understood, and when manual dexterity is possessed by many of its members to a degree which has never been surpassed.

Under these circumstances, and in such hands, I am induced to hope, that the communication may be productive of some usefulness, particularly as the partial inflation of *the urethra* in cases of stricture, has been lately introduced by Mr. Arnott's publication.

folio volume, printed in Zurich, in 1555. Haller notices this invention in his Bibliotheca Chirurgica, Vol. II. p. 181.

CURSORY REMARKS

ON

SMALL-POX,

AS IT OCCURS

SUBSEQUENT TO VACCINATION.

By GEORGE GREGORY, M. D.

PHYSICIAN TO THE HOSPITAL FOR SMALL-POX AND VACCINATION, AT ST. PANCRAS.

Read Jan. 7, 1823.

THE acknowledged frequency of cases of small-pox subsequent to vaccination, in all parts of the country, is such as to have excited, in no inconsiderable degree, the fears of many, and the anxieties of all. No one can look back upon the history of the last few years without feeling sensible that these unpleasant occurrences are on the increase, and it becomes, therefore, a matter, not of curiosity merely, but of real necessity, to attempt some regular investigation of the subject. The difficulty cannot be met by mere reference to the fact, that small-pox, once gone through, does not always secure to the subject immunity from a second attack. Cases of small-pox after vaccination are, beyond all comparison, more frequent than cases of *secondary* small-pox. The latter

were, at all times, objects of curiosity, even to the older members of the profession. There are few who have not seen repeated instances of the former. Within the walls of the Small-pox Hospital, the latter were rarely seen. The former constitute, at the present time, a considerable proportion of the admissions into that institution.

With the view of illustrating this point, and also of showing how far the prevalence of small-pox, after vaccination, is on the increase, I have, in Table No. 1, given the total number of admissions into the Small-pox Hospital in ten different years, distinguishing such as occurred after real or *presumed* vaccination*. From this table it appears, that, in the year 1810, the proportion of cases of small-pox succeeding vaccination to the whole number of admissions, was as 1 in 30; in 1815, as 1 in 17; in 1819, as 1 in 6; in 1821, as 1 in 4; and during the year 1822, as 1 in $3\frac{1}{2}$.

Above 100 cases have occurred at the Small-pox Hospital during the last three years, the greater number of which fell under my own observation. Fifty-seven were admitted in 1822. The opportunities which have thus been afforded to me

* All cases are here entered as having undergone vaccination, where the cicatrices were apparent, or failing that criterion, where the patient had a *distinct* recollection of the arm having risen, and of the general progress of the disease. Such cases as were *known* to have failed are *excluded*.

of observing small-pox, as it occurs subsequent to vaccination, have been tolerably extensive, and sanction, in some degree, the liberty which I presume to take, of laying the results of my observation before the notice of my professional brethren.

The occurrence of small-pox after vaccination is a subject of very considerable pathological interest. Independent of its importance, as a question affecting the world at large, it affords curious matter of enquiry to the investigator of disease. It forms a link in that chain of facts which bear upon the general influence of the variolous poison upon the animal economy, and the several modifications of which it is susceptible; and, to be thoroughly understood, it must be viewed in conjunction with them. The subject is one of no ordinary difficulty; but it is not my intention, on the present occasion, to enter upon it in that detail which I believe it to deserve. My remarks will be very cursory, and my principal design to put upon the records of the Society some evidence that no fact which has reference to the great question of vaccine protection, is overlooked or concealed.

I am thoroughly sensible of the extreme delicacy of this enquiry. The mere agitation of the question in a Society like this may be deprecated by some as altogether unwarranted and uncalled for; and, from the distrust of vaccination which it

seems to imply, calculated to occasion much serious evil. Were I not satisfied, that this view of the subject is overstrained, I would not proceed. It is, however, clear to me, that vaccination is now so well established, that no real danger can arise from examining, even in the strictest manner, every phenomenon connected with it. A large proportion of mothers, in the present day, were themselves vaccinated, and, therefore, the popular prejudices may now be considered as in favour of vaccination rather than against it. So far from anticipating evil, I look forward to the public good being benefited by the free discussion of the subject. Many persons have been brooding in secret over the failures of vaccination, and appear to have a fear of expressing their sentiments concerning it, or of meeting the question, in any way, openly. To them the avowed investigation of the subject will, I am persuaded, prove satisfactory. But, besides this, it is only by candid discussion that we shall ever be able to determine that highly important point, how far the failures of vaccination are owing to causes under our control; and how far, therefore, there exists a reasonable probability of obviating them, either wholly or partially, so as to increase the security of the vaccinated.

I shall first enquire in what manner, and to what extent, the effects of the variolous poison upon the animal economy are modified by the influence, previously exerted, of the vaccine virus.

I shall then offer a few reflections on the causes of the occurrence of small-pox after vaccination, and on the sources of difference in the degree of modifying influence which vaccination exerts.

It is almost unnecessary to remark, in the first place, that, in a very large proportion of cases, the same immunity is afforded by vaccination as by once undergoing the genuine variolous disease. What the *exact* proportion is, we are unable to ascertain. It does not even appear that any approximation to the truth, which can be much relied on, has yet been made. We may even go further, and be warranted in saying, that no calculations tending to establish this point, which are made in the present day, can reasonably be expected to hold good in future; and the reason is obvious. The failures of vaccination are now far more numerous than they were ten years ago, and no certainty exists that they have yet reached their maximum.

In cases where the vaccine virus fails to impart a *perfect* security from the future influence of the variolous poison, it serves, at least, to modify *certain* of its effects. These it is important to investigate.

1. Vaccination does not appear to lessen the violence, or shorten the duration, of the first or eruptive stage of fever, which is generally as se-

vere, and even sometimes severer and longer in its duration than that of the casual confluent small-pox.

2. It does not appear in like manner to influence the *quantity* of eruption upon the skin, so much, at least, as has been generally imagined. It is true that, in many cases of small-pox, subsequent to vaccination, the eruption has been very scanty; but, in a large number also, I have seen it very copious, more particularly about the face, breast, and upper extremities, and occasionally fully equal, in point of *quantity*, to what is seen in the worst kinds of confluent or coherent natural small-pox.

3. The great power of vaccination unquestionably consists in modifying the *progress of inflammation* in the variolous eruption; and here it cannot fail to attract observation, how strikingly opposed to each other, in this respect, are the influences of inoculation and of vaccination. Inoculation lessens the *quantity* of eruption, but does not alter, in the slightest degree, the progress of inflammation in that which *is* brought out. Vaccination, on the other hand, while it does not sensibly affect the *quantity* of eruption, always influences, more or less, the progress of inflammation, however copious the eruption may be. The same desirable result, the diminution of mortality, is obtained in either way. By checking the quan-

tity of eruption, or the degree to which inflammation in it extends, the disease is prevented from bringing on those impediments to the functions of respiration and perspiration, which occasion secondary fever, and endanger life.

In all, or nearly all cases of natural and inoculated small-pox, the eruption proceeds to ulceration, more or less superficial, according to the violence of the disease; and the ulcers heal by the common process of scabbing and cicatrization. In cases of small-pox, however, subsequent to vaccination, the cutaneous inflammation is checked at so early a period, that the fluid in the vesicles seldom reaches the state of pus, the cutis vera is never ulcerated, and consequently the healing process takes place by the conversion of the vesicles into tubercles, and their subsequent *desquamation*. This constitutes a very well-marked and important character of the vaccine or modified small-pox. A similar modification of the variolous inflammation of the fauces and trachea undoubtedly takes place; but the exact nature of the difference it is, in this case, more difficult to define.

4. Though vaccination modifies, in a large proportion of cases, the progress of inflammation in the skin and throat, it is curious to observe that it does not always affect the course of the disease, when the variolous poison fixes itself on other

parts, more particularly on the brain*. It is, in this manner, that small-pox, after vaccination, occasionally proves fatal.

The following cases will illustrate the position which is here advanced.

CASE I.

Variola succeeding vaccination, modified in as far as regards the eruption, but proving fatal by affection of the brain.

William Timms, æt. 30, labourer in lead works, in the habit of frequent intoxication, was admitted a patient into the Small-pox Hospital, Sept. 21, 1820. He had been vaccinated by Mr. Griffin, surgeon, of Deddington, Oxfordshire, 18 years previously. Two vaccine cicatrices were very apparent on the left arm. The eruption proved to be distinct, and on the 7th day it was drying on the face, and exhibiting the usual tuberculous character of modified small-pox. Throughout the

* I may be permitted, perhaps, to remind those who have not been in the habit of seeing small-pox lately, that the eruption on the skin and throat is only one of the effects of the poison. Another, at least equally important, both with reference to pathology and practice, is that which is exerted upon the brain and nervous system; the chief evidences of which are delirium, inflamed eyes, stupor or restlessness, and disposition to erysipelas and gangrene.

whole course of the disease, however, there were some obscure marks of affection of the brain. On the subsidence of the cutaneous inflammation, comatose symptoms came on, and he died on the following day.

The brain, on dissection, exhibited no appearances of recent disease.

CASE II.

Variola succeeding vaccination, modified in as far as regards the eruption, but proving fatal by an obscure affection of the brain.

Ruth Beddoes, æt. 19, of gross and plethoric habit of body, was admitted into the Small-pox Hospital, Sept. 28, 1822, with a distinct and mild eruption, attended, however, with considerable conjunctival inflammation. She had been vaccinated five years previously, at Bishop's Castle in Shropshire. The arm *inflamed severely*, and for a long time afterwards was kept in a sling. A very small vaccine cicatrix was observable in her left arm.

The cutaneous eruption passed through its stages rapidly; but the appetite never returned. On the eighth day, ophthalmia came on with great violence, yielding, however, to the free use of the lancet. Five days afterwards, the arm in which

she had been bled became affected with severe erysipelas, which subsequently attacked the leg of the opposite side. Four days after this, violent delirium supervened, and she gradually sunk into a state of low typhus, in which she died. On opening the head, no morbid appearances of any kind could be detected, nor were there any traces of disease in the thorax or abdomen.

Having thus described the manner in which the effects of the variolous poison are modified by previous vaccination, I proceed to notice the *degree* to which such modification takes place. This varies very greatly;—to an extent, indeed, hardly conceivable by those who have not paid minute attention to the subject. Sometimes the disease, after vaccination, is so *highly* modified, that physicians can scarcely think themselves warranted in calling the complaint small-pox. It has all the characters of *varicella*, and has even been confounded with those slight papular eruptions which are met with in particular habits, and in irritable skins, more especially in warm weather.

On the other hand, the modification produced by previous vaccination is, in some few cases, so *trifling*, as hardly to be perceptible. Between these extremes, every possible gradation has been noticed; as the practice of the Small-pox Hospital, during the last year, has abundantly testified.

It is highly satisfactory to know, that the instances of *complete failure*, from well-ascertained vaccination, are very few in number, and will hardly bear a comparison with those numerous instances, in which the disease was so modified by it, as to preclude *all* anxiety for the patient's safety. Of the fifty-seven cases of small-pox, after vaccination, admitted into the Small-pox Hospital in 1822, forty-four were discharged in perfect health *within* fourteen days from the period of their admission*. There were five fatal cases. The history of one of these (Ruth Beddoes) has been already detailed; and it is evident from the reported state of the arm, that the vaccination, in this instance, was not trustworthy. It is, moreover, fair to presume, from the *high* degree of inflammation which attended the process of vaccination, that there was a strong *predisposition* in this constitution to suffer from the variolous poison, and the result would, perhaps, have been equally fatal, had the patient taken small-pox by inoculation. The same degree of doubt attaches to the remaining four. In two of them, the cicatrices were very large and irregular. In one, *no* cicatrix was discernible; and in one only could it be said, that the scars were tolerably regular.

In the present state of the country, it appears highly desirable that some investigation should

* Table No. 4 exhibits an abstract of the periods of their duration in hospital.

take place into the real causes of the occurrence of small-pox after vaccination, in order to determine, if possible, how far there is any probability of our being able to obviate them in future. The following observations are thrown out with the view of assisting in the determination of this question:

1. Small-pox after vaccination, unquestionably prevails in particular families; showing, that in them there exists some peculiar susceptibility of the variolous poison. Various instances of the kind have fallen under my own immediate observation, the most striking of which is the following:

George Ferriman, æt. 30, was admitted into the Small-pox Hospital Oct. 28, 1822, with *pretty severe* modified small-pox; and with him were also admitted his two children, Thomas and Harriet, both labouring under a *very slight* form of the same disease. The father had been *inoculated for small-pox* when a child, and was always considered to have passed through the disease in a regular way. His children had been *vaccinated*, and their arms exhibited very perfect cicatrices.

I have seen small-pox attack three individuals of the same family, who had been vaccinated at different ages, in different places, and by different persons. I witnessed this, during the last summer, in the family of a medical practitioner, in the neighbourhood of Red Lion-square.

2. It is certainly worthy of observation, that the great majority of cases of small-pox subsequent to vaccination, which have occurred at the Small-pox Hospital, have been persons between the ages of 15 and 21. Nineteen is the average age of the whole, as the Table, No. 2, will show. How far this may depend upon accidental causes, or upon the length of time which has elapsed since the general diffusion of vaccination, I am unable to speak decisively. From the fact, however, that many of these persons had been frequently and thoroughly exposed to the contagion, at former periods of their lives, I am induced to entertain the notion, that there is something in the habit of body peculiar to that age, which renders the system more than usually disposed to suffer from the influence of the variolous poison.

The circumstance now adverted to has lately become obvious to the world, and it has revived an opinion entertained in the earlier days of vaccination, that its influence on the system wears out in the progress of life, and requires periodical renewals. The notion has latterly been acted upon to a great extent; but I have not been able to ascertain, that the results of *revaccination* correspond with the theory which leads to it.

3. In any investigation of the causes of small-pox subsequent to vaccination, it would be improper to overlook the remarkable connection that

subsists between the degree of perfection in the vaccine cicatrix, and the violence of the secondary disease. This important fact was forced upon my attention by the results of the last year's experience at the Small-pox Hospital. It is, indeed, in opposition to the opinion entertained by several authors of acknowledged reputation; but the extent of my opportunities enables me to speak with much confidence on this point. When the scar on the arm is perfect,—that is, distinct, circular, radiated, and cellulated; but, above all, when it is small, so that it may be covered by a pea;—the secondary affection (if from peculiarity of habit, or any other less ascertained cause, it does occur,) will be slight, and hardly deserve the name of a *disease.*

On the other hand, whenever the scar is large, and bears the marks of having been formed by high local inflammation, and wants the other distinctive characters just enumerated, the chance of small-pox occurring in after-life will be greater, and, *cæteris paribus*, there will be a stronger likelihood of its proving severe.

This principle receives a striking confirmation from what takes place in *revaccination.* Where the cicatrix is perfect, it is impossible, or nearly so, to reproduce the vaccine disease in any thing like its genuine form. In proportion to the imperfection

of the cicatrix, will be the degree of approximation of the *second* to the *primary* vaccination.

These considerations tend to establish, *as a pathological principle*, that the occurrence of small-pox, subsequent to vaccination, is dependent upon the *intensity of the vaccine influence, as primarily exerted;* and they lead to the belief, that the appearance of the cicatrix may be taken as a *measure of that intensity.*

4. The last point to which I am desirous of directing the attention of the Society is the fact, that a very large proportion of those persons who have been admitted, during the last three years, into the Small-pox Hospital, having the disease subsequent to vaccination, had been vaccinated in the country. This may be considered, perhaps, as an *accidental* circumstance. It may be argued, that the domestic servants in London, who, of all persons, may most naturally be expected to resort to an hospital in the time of sickness, are, in a great measure, supplied from the country. It may possibly be owing, in part, to the susceptibility of the disease being increased (here, as in other instances) by change of air; but, making all necessary allowances, the disproportion between those who take small-pox, after vaccination in the country, and after vaccination in London or some other large town, still appears to me so great, that we must seek for an explanation which may have a

wider range of influence. I have long been impressed with the notion, that practitioners in the country have frequently vaccinated with lymph, which was *not perfect* in its qualities. I am inclined to entertain this opinion, first, from having been able to trace several cases of small-pox after vaccination to *particular* villages, in counties bordering on the metropolis; and, secondly, from having observed, that a great proportion of those admitted into the Small-pox Hospital after country vaccination, had *large*, *irregular*, and therefore *imperfect*, cicatrices.

If the notions which I entertain of the influence of vaccination on the animal economy, and on the causes of its occasional failure, are correct, their general diffusion might assist, not only in upholding vaccination as an object of great national and individual importance, but in checking those unpleasant occurrences which are now making such alarming inroads on the confidence of the public in the vaccine protection. It would induce practitioners to revaccinate, with fresh and genuine lymph, those whose arms do not exhibit the perfect cicatrix;—it would lead those in the country to apply more frequently to large towns for a supply of recent lymph;—it would point out the propriety of their putting less confidence than heretofore in points and preserved lymph;—and it might impress upon all the *indispensable* necessity of a close attention to every part of that process,

which, though of trifling import at the moment, is yet of incalculable consequence to individuals in every future period of their lives.

APPENDIX.

No. I.

List of patients having small-pox after vaccination, admitted into the Small-pox Hospital, in two different periods, of five years each; showing the proportion such cases bear to the whole number of admissions.

Year.	Total admissions.	Total of Small-pox after Vaccination.	Proportion of Cases of Small-pox after Vaccination, to the whole number of admissions.
1809	146	4	One in 36
1810	149	5	30
1811	94	6	15
1814	79	4	20
1815	101	6	17
Total in 5 years.	569	25	22
1818	58	9	6
1819 To Sept. 7.	97	17	6
1820	142	25	6
1821	117	28	4
1822	194	57	$3\frac{1}{2}$
Total in 5 years.	608	136	$4\frac{1}{2}$

No. II.

Table of the ages of the different patients affected with small-pox after Vaccination, who have been admitted into the Small-pox Hospital during the last five years.

Under 10	years of age,	5 persons.
At 11	.....	2
12	.....	1
13	.....	2
14	.....	5
15	.....	3
16	.....	7
17	.....	14
18	.....	13
19	.....	11
20	.....	18
21	.....	13
22	.....	9
23	.....	10
24	.....	9
25	.....	4
26	.....	3
27 and upwards,		7
		136

No III.

List of patients having Small-pox after Vaccination; distinguishing those vaccinated in the country from those vaccinated in town, and those not ascertained.

Year.	Vaccinated.			Total Vaccinated.
	In the country.	In London.	Not ascertained where.	
1809	3	1	0	4
1810	4	0	1	5
1811	5	0	1	6
1814	4	0	0	4
1815	5	1	0	6
1818	7	0	2	9
1819 To Sept. 7.	11	1	5	17
1820	6	1	18	25
1821	19	2	7	28
1822	35	6	16	57
Total.	99	12	50*	161

* There is every probability, that the fifty persons set down in this column, were vaccinated in the country; as *residents* in town would hardly have expressed any doubts on the subject.

No. IV.

Table, exhibiting the duration in hospital, of the cases of small-pox after vaccination, admitted into the Small-pox Hospital during the year 1822.

Less than	7 days, ...	12 persons
———	14	32 .....
———	21	6 .....
———	6 weeks, ...	2 .....
Fatal Cases	.....	5 .....
	Total	57

ON THE COMPARATIVE VIRTUES

OF DIFFERENT KINDS OF

SARSAPARILLA.

By Mr. JOHN POPE.

COMMUNICATED

By Mr. EARLE.

Read Jan. 14, 1823.

THE varied success attendant on the use of sarsaparilla, has been owing, no doubt, to the various qualities of the root itself, and the mode adopted for extracting its virtues; and as long as medical men are in theory divided as to what constitute the active properties of this medicine, and the best methods of obtaining them, so long will its efficacy be partial and unsatisfactory.

A desire to rectify some prevalent errors respecting sarsaparilla, and to establish the relative value of the different kinds, has induced me to devote considerable attention to the subject.

The sarsaparilla imported into the London market is generally distinguished as Lisbon, Honduras, and Vera Cruz, those being the ports from which it has usually been shipped.

The Lisbon has always been esteemed the best, and commanded the highest price in the market. It is the produce of the Brazilian settlements of Pura and Ataranham in South America, and has acquired the name of Lisbon, from being, till within the last few years, only to be procured at that port. Its characteristics are, externally a reddish or dark brown coat; when cut longitudinally, it has a white farinaceous appearance, and is usually more free from chumps and fibre than the other kinds.

The Honduras is brought from the ports on the bay of that name, Balize, and others adjacent; and although it has *not* commanded so good a price as the Lisbon, yet it has, of late years, been held in higher estimation by the medical world, in consequence of its having been brought into notice by some eminent practitioners of the last century. Its characteristics are a dirty brown, sometimes a whitish coat. It is not so red as the Lisbon, is usually more fibrous, and possesses more pith.

The Vera Cruz is mostly brought from that port, and is altogether inferior to the former kinds, being lean, dark, and fibrous. Within the last three or four years, sarsaparilla has been brought from Jamaica, and is generally supposed to be the produce of that island. It differs much from the other kinds in appearance, and still more in the extract it yields. It has a peculiar deep red external coat, is of somewhat close texture, and when cut longi-

tudinally, that part next the outer coat (which we designate as pith in the other kinds) is found, more or less, to be of a deep red color. It was, some time since, strongly recommended to the medical world by Mr. Richard Battley, whose reputation, as a pharmaceutical chemist, is well known; and who, by a number of very conclusive experiments, satisfactorily established its superiority. He has very obligingly favored me with the results of his experiments, which, for the most part, fully confirm my own observations. He considers it the growth of Jamaica, and has distinguished it by the term red rete mucosum sarsaparilla, on account of its deep red color, more particularly of the inner bark.

My own inquiries on the subject lead me to conclude, that it is *not* the growth of that island. As the *red* is not the only kind brought, by way of Jamaica, into the London market, some parcels which I have examined are undoubtedly the usual Honduras sarsaparilla.

From the best information I have been able to collect, I am decidedly of opinion, that the *red* sarsaparilla is the *uncultivated* produce of parts of the Spanish Main, where it is collected by the native or Independent Indians, who barter it in exchange for articles of European commerce to the traders who frequent their shore, and by whom it is carried to Jamaica;—but the other kinds, more

particularly the Lisbon, are probably the *cultivated* produce of the places from whence it is shipped direct to the European market—the great demand for them, being likely to have led to their cultivation, and the pains evidently taken in the trimming, arranging, and packing of the best samples, seems to favour such an opinion.

From a careful and minute examination of all the above kinds of sarsaparilla, it is satisfactorily proved—

That the whole medical efficacy of the plant resides in the *bark*, and consists of pure extractive matter, of which the *best* of each kind yields the largest quantity.

That the root deprived of its cortical part, contains only pith, and tasteless woody fibre—yielding nothing but insoluble mucus and a very small proportion of extract either by cold or hot infusion.

That the cortical part of sarsaparilla gives out nearly the whole of its virtues by cold infusion in distilled water—very readily to lime-water, or water slightly impregnated with caustic alkali—and that *boiling* distilled water extracts all its virtues.

That on a comparison of the different kinds of

sarsaparilla, the *red*, lately brought from Jamaica, yields by far the largest proportion of extractive matter.

That by submitting the root, cut transversely, to the action of steam or of distilled water, at a temperature somewhat below boiling, an elegant soluble extract may be obtained, containing all the virtues of the plant, not liable to decomposition, and applicable to the various purposes of extemporaneous prescription.

The following is a brief extract, from numerous experiments, which have led to the foregoing conclusions.

Equal quantities, by weight, of the several sorts of sarsaparilla, by infusion of the split root in distilled water, and the solutions filtered through paper, gave hard extract in the following proportions :—

	By cold infusion.	Subsequently by hot infusion.	Total.
Red Rete Mucosum * (Jamaica)	44	20	64
Lisbon, fine picked sample	28	14	42

* Mr. Battley's experiments were still more in favour of the *red* in comparison of the other kinds, about 3 to 1. The unusually fine quality of the Lisbon and Honduras which I employed, may, in some measure, explain the difference.

	By cold infusion.	Subsequently by hot infusion.	Total.
Lisbon, second quality *	22	14	36
Honduras, fine picked sample	30	18	48
Do. second quality *	21	14	36

Equal quantities of the *cortical* part, and of the *wood* carefully separated, gave, by infusion in boiling distilled water, after filtration, the following proportions of hard extract:—

Bark of the Red Jamaica - - -	100
Wood of do. - - - -	20
Bark of the Honduras (the fine sample) -	48
Wood do. do. - -	24

The root sliced, bruised, boiled, and expressed in the usual way gave extract as follows:—

Red 130 { or very little more than obtained by infusion.

Lisbon 90 Do.

Honduras 180 nearly double the quantity obtained by infusion, but a very tough insoluble extract, containing all the mucilaginous part of the plant, consequently extremely prone to spontaneous decomposition.

* The second sort employed was of good average quality, such as is usually kept for sale.

From the above few parts thus briefly stated, it is evident, that by the usual mode of treating sarsaparilla, is chiefly obtained a large proportion of insoluble, inefficacious matter: that the kinds of root usually selected, contain only a small proportion of the active properties of the plant, compared with that lately brought from Jamaica, and which is decidedly the best we are at present acquainted with.

96, *Oxford Street.*

CASE

OF

STRICTURE OF THE URETHRA,

TREATED BY INCISION,

By JAMES M. ARNOTT, Esq.

Read June 26th, 1822.

IN cases of Stricture of the Urethra of long duration, which do not admit of the passage of the smallest bougie, and where the application of the caustic is not producing any benefit, it sometimes becomes a question what further treatment ought to be pursued. The ordinary practice in such cases is, to persevere with further trials of the caustic, whilst it occasionally happens that an attempt is made to force the stricture; but with respect to the cutting down upon the diseased parts, this has been usually reserved for the extreme case where total obstruction to the passage of the urine has taken place, and the patient is in immediate danger from distended bladder. In the treatment, however, of the old and narrow stricture of the urethra, although the obstruction to the passage of the urine be not complete, this last operation appears to me to offer some advantages; and as it is not usually resorted to simply with the view of

curing the stricture, perhaps the relation of the following case may not appear uninteresting.

The patient was a married man, 49 years of age, of spare make and temperate habits, who, for the last fifteen years, had suffered from stricture of the urethra; and for which, at different times, he had been under the care of various medical men. For the last four years, however, it had not been possible to get a bougie into the bladder; and about twelve months before I saw him he had consulted an eminent surgeon, who, at the end of eight weeks, having failed with other means, had endeavoured, but without success, to force a catheter into the bladder; considerable hemorrhage following this attempt, the patient for a time desisted further seeking relief.

When he came to me he complained of being called upon every hour to make water; and these calls were extremely urgent, attended with much straining and severe pain, with the total incapacity on his part of being able to urge his urine but drop by drop. On passing a bougie, it was stopped towards the bulb of the urethra; and on trial it was found impossible to get the smallest bougie into the obstruction. He was kept quiet for a few days, but on then renewing the attempt, and afterwards at intervals for a fortnight, the same want of success was still experienced. The caustic was now applied, and repeated twice at the intervals of

five or six days, but without any beneficial result, and, under all the circumstances of the case, feeling little confidence in the remedy, I laid it aside.

Upon taking into view, then, that the disease was one of long standing, and that the patient had been under the care of a number of practitioners, the probability was, that the parts were firm and indurated, and that the morbid change occupied some extent of the urethra. Upon these considerations it appeared to me that the only way of avoiding all uncertainty as to getting fairly through the obstruction would be to cut down upon it, more especially as the patient's health was in a very favourable state for the success of such a method of treatment. On submitting the case to Mr. Shaw, that gentleman came to the same conclusion as myself with regard to the expediency of the proposed operation; and the patient agreed to it at once, rather than continue in his present distressing state.

Owing to a contraction of the urethra an inch and a half from its extremity, a catheter, under the middle size only, could be passed down to the obstruction at the bulb; and as its point could be but obscurely made out in the perineum, the external incision was made rather free. On reaching it, and making an incision in the urethra anterior to the obstruction, the point of a very small grooved probe was guided into the aperture and pushed on to-

wards the stricture, into which it entered with little difficulty, and was afterwards felt to have entered the bladder. Upon this a bistouri was run down, and the strictured portion divided, occupying, if one might judge by the sensation, not so much as a quarter of an inch in length. The probe being kept in its place in the urethra, the catheter was immediately carried onwards with great facility into the bladder, and upwards of a pint of urine drawn off; although about ten minutes before the operation, the patient not being able to resist the pressing call to make water, passed a small quantity, and had, as he supposed, completely emptied his bladder.

No unfavourable symptom occurred. On the fourth day the catheter was withdrawn; for when the patient was making water through it, the urine passed partly by the sides of the instrument, between it and the urethra. It was replaced by a larger sized one of elastic gum; but in two days afterwards this was taken out, as it seemed to create irritation, and a silver one, of a size fuller, passed in its place; which again, in two days more, gave way to one of the largest size. The wound healed favourably: for the first five or six days its lips were merely moistened with urine; by the end of a fortnight it was quite closed. The catheter was then withdrawn during the day, the patient now making water in a full stream; the instrument was, however, continued to be worn at night for

another week, when it was left off, and a bougie afterwards passed only occasionally. In the course of the first eight days of wearing the catheter in the urethra, the induration surrounding the contraction in the canal, an inch and a half from its extremity, had entirely dispersed, and the largest sized catheter passed with facility.

The advantages of the treatment by incision in the above case are very evident: and if, without entering into any theory with respect to the origin of stricture, we merely consider what dissection proves to be the state of the affected parts in cases similar to that just related, we shall probably come to the conclusion, that this method of cure ought to be more frequently adopted than it has been hitherto. When a stricture has existed for years, and has been the subject of much and unsuccessful treatment, the parietes of the urethra at the seat of the obstruction are thickened and indurated, so much so as frequently to amount to callosity. The difficulty with which caustic acts on a texture so indurated as we have here to deal with must be manifest, and is proved by the fact of the number of applications, sometimes amounting to sixty or seventy, found necessary to get through a stricture, which, there is reason to think, is of no great extent: besides, we never can be perfectly sure that we are applying the remedy exactly to the proper place, as is evidenced by the production of false

passages from its employment. In using the knife there is neither the former difficulty nor the latter uncertainty; we at once get through the obstruction, and fairly through it: both of which circumstances were much facilitated in the above case by the assistance of the small director. This instrument was of the size of the smallest catgut bougie; and although a stricture may not give entrance to a flexible instrument of this size introduced from the extremity of the urethra, still a solid one held very near it may be carried in, even in those cases where, as in the one related, the urine should have passed only *guttatim*.

The removal of the induration is the consequence of keeping the catheter in the urethra; for during this time it gradually disperses: at least we may infer that this is the case, from what occurred at the stricture an inch and a half down, in the instance that has been detailed. The visible phenomena were, slight irritation in the canal, some puriform secretion from its surface, and the disappearance, in the course of eight days, of the indurated substance; a process which would have been, by the older surgeons, sufficiently, although not accurately, designated by the expression of its having melted away. And I may take this opportunity of mentioning, that, as far as my own experience goes, whenever there is organic change constituting a stricture, much greater advantages

are derived from leaving an instrument in the urethra for some time, than by the usual practice of merely passing it for a few minutes.

In judging of the advantages of the treatment by incision of such cases of stricture as we are speaking of, we must also take into account, that whilst the extent in length of the diseased change is seldom great, still it sometimes is considerable; a circumstance weighing against the employment of the caustic, but which is of no moment with regard to the knife, as the extent of three lines or twelve can be divided with equal ease and quickness.

The only arguments which may be advanced against the resorting to the treatment by operation, are its danger and severity. As for the first of these, no surgeon thinks of danger when he cuts down upon a stricture in order to heal a fistula in the perineum, and surely there is no additional risk in the cases we are considering. With respect to the severity of the process, this will scarcely be taken into account by those who have witnessed the distressing state of a man with a stricture so narrow that he can only pass his urine in drops or in a thread-like stream; or by a surgeon who knows that such a state will gradually wear out the patient's health, even should he not be attacked with total retention of urine, which he is daily liable to, and will then of necessity require the performance

of this or a still more severe operation, under unfavorable circumstances for its success.

It is unnecessary to point out the superiority of the treatment by incision over what has been called forcing the stricture, which, although reprobated in principle, seems still occasionally adopted in practice: for if an instrument is to be urged into the bladder, it is very evident that it is much better to do it by the former method, which is simple, easy, and certain, than by the latter, where nothing is certain, but that great violence must be used.

Golden Square,
June 22d, 1822.

ON THE

OCCURRENCE IN PERSIA

OF THE

EPIDEMIC CHOLERA OF INDIA.

By JOHN CORMICK, Esq.

COMMUNICATED IN A LETTER TO

H. L. THOMAS, Esq.

Read Jan. 28, 1823.

Tubriz, Persia, October 3*d*, 1822.

MY DEAR SIR,

The spasmodic cholera of India reached last year as far as Shiraz; and this year we have had it here, and in almost every other city of Persia. At this moment, it has gone as far as the western frontier of Persia, and, having come thus far west from Calcutta, who can say that it will not reach as far as Europe? This disease differs from the cholera morbus of nosologists in this respect, that there is not a vomiting and purging of bile, as its name would imply, but of a whitish water, without taste or smell, and resembling that in which rice had been boiled.

The general symptoms were a vomiting and purging of immense quantities of the above whitish li-

quid: the surface of the whole body become cold, more particularly the hands and feet, which assume a dark blue colour, approaching to black: pulse entirely lost: violent spasms of the muscles of the legs, thighs, and abdomen; eyes sunk, great thirst, countenance fallen, and more that of a dead than a living man; extreme restlessness: anxiety and oppression of the præcordia; the palms of the hands and soles of the feet corrugated, as if they had been a long time immersed in warm water; a total cessation of the secretions of the urine, bile, and saliva. The blood recedes from the surface, and accumulates in the cavities of the abdomen, thorax, and cranium: the heart is felt to palpitate and labour hard, to propel forward the mass of blood that is pressing upon it from the large veins. While every thing indicates a want of circulation, and the stagnant venous blood gives a dark colour to the whole body, the eyes alone are of a bright red colour and covered with arterial blood, indicating the fatal accumulation that is taking place within. In many cases, the attack was so violent that the sufferers sunk, and, with a few efforts to vomit, expired.

In the treatment of this disease, I allowed (when present at the commencement) the vomiting, &c. to go on for some little time, while I perceived that the discharges were copious, and unattended by severe straining and exertion. When I perceived the discharges diminished in quantity, the first object was to allay the vomiting, in order to gain time for

the administration of such other cathartics as would most speedily bring on alvine evacuations of a dark colour or bilious nature; for, until this was effected, a cure could not be anticipated with any certainty, and this object once gained, two thirds of the difficulty and danger of the disease are removed. Calomel, sometimes alone, sometimes combined with opium, and at other times opium alone, had this effect. Occasionally, when all these failed, injections twice or thrice repeated, of laudanum and warm water, or rice water, one dram in a pint, succeeded. I always gave calomel the first trial, as it possessed the additional advantage of bringing on a healthy action in the liver, which was gorged with blood and a secretion of bile, more readily and more effectually than any other medicine with which I am acquainted. As soon as the state of the stomach admitted of it, I gave six to ten grains of calomel, with ten grains of compound extract of colocynth every hour, administering at the same time a stimulating injection, generally of salt and water. This medicine I used as, being small in quantity, it was less likely to bring on a recurrence of the vomiting. After three or four repetitions of it, if copious evacuations were not produced, which was seldom the case, I gave an ounce of castor oil, with as much peppermint water, every hour till this object was attained.

In many cases, recovery was so slow that strong purgatives were necessary every five or six hours for

two or three days. It happened but seldom that I was called in at the very commencement of the attack to try copious bleeding, when the best effects might reasonably be expected from it. I tried it in some instances during the violence of the attack, but found so much difficulty in procuring the flow of five or six ounces, that I gave it up. During the secondary stages of the disorder, however, I found it of infinite use in relieving the head, removing the disposition to coma, and facilitating the return of the healthy secretions of the hepatic system. Topical bleeding by cupping, leeches, and opening the temporal arteries, I had frequent recourse to, and never without beneficial effects. It was with warm bathing as with blood-letting; during the greatest violence of the attack I often tried it, but the patient never felt any relief; on the contrary, he complained of increased sufferings, and always felt more exhausted afterwards. When, however, this stage had passed, it greatly expedited his recovery, and seemed to me to be particularly serviceable in restoring the secretion of urine.

As far as my own experience has gone, I am inclined to place but very little confidence in large and repeated doses of laudanum and æther, so freely administered in India on most occasions. Indeed, the inflamed and ulcerated state in which the stomach has been found in a great many cases, examined after death, would seem to contra-indicate them. I am inclined to believe that inflammation

of the stomach, though very common, does not however exist in all cases, and, if we could distinguish those in which it does not, then indeed, the above medicines would produce beneficial effects. I tried them in two or three cases when the disease first made its appearance here, and I am now sorry for it, as valuable time was thus lost.

Externally, I went through the usual routine of volatile and stimulating liniments, frictions with laudanum, spirits, &c. but cannot say that they produced any obvious good effects. Latterly I was led, by repeated experience, to place most confidence in pieces of blanket moistened in water, almost boiling, and constantly rubbed and tied about the legs and arms. This kept up heat in the extremities better than any thing else I saw tried.

The disease first began in that part of the city which is most low, filthy, and crowded with poor inhabitants; and advanced from quarter to quarter of it; finishing its ravages in one before it commenced them in another. It was most destructive in the houses which were low, and possessed most inhabitants. In no case did I see a patient abandoned by his friends, under the idea that this epidemic was contagious. This idea seems, indeed, to be very generally abandoned. The family of the Prince quitted this city after the violence of the disease had already begun to abate. They, however, carried the epidemic along with them and con-

tinued to be attacked, from four to six a-day, for about ten days, wherever they went, although not a single person of the villages through which they passed, or where they slept, took the disease. Was it that they carried the contaminated atmosphere along with them? or, being in a healthy climate and amidst healthy people, 35 miles from the city, they continued to suffer from their previous exposure to the unhealthy air of Tabriz? During our sufferings, ten or twelve thousand of the King's troops passed this city. They were prevented, by guards stationed at the gates, from entering it, but several of them passed the day under the walls. During the following day, however, the disease manifested itself among them, and they suffered from it very severely. So far for the spasmodic cholera. We have just received the accounts of its re-appearance at Shiraz and Bushire, where it rages at this moment. As yet we do not know that it has shown itself in any part of Turkey; but, no doubt, they will have it among them next year, and, as they have a much more crowded population, and are naturally less alert than the Persians in running away from it, its ravages among them are likely to be the more severe.

As this destructive disease seems to be approaching Europe, and is likely to excite considerable interest in the medical world there, I thought I could not fill a letter with matter more interesting to you than communicating what I knew of this epidemic.

If I have failed, you will, I trust, give me credit for good will at least. In this city, water boils at 204° of Fahrenheit. The atmosphere is generally clear, cold, and healthy; and if, in such a climate, this epidemic commits such ravages as almost to equal its effects in many parts of India, I much fear it will extend to Europe, where the crowded cities and great population will make it more severely felt than it has been in the scattered cities and scanty population of Persia.

Believe me, my dear Sir,

Ever sincerely yours,

JOHN CORMICK.

AN ACCOUNT

OF

A RARE CASE

OF

COMPLICATED LABOUR,

FROM LOCKING OF THE HEADS OF TWINS:

TO WHICH ARE SUBJOINED

NOTICES OF TWO RECORDED CASES OF THE SAME DESCRIPTION;
WITH A SUGGESTION OF A METHOD FOR EFFECTING
DELIVERY UNDER SIMILAR CIRCUMSTANCES.

By JOHN ALLAN, Esq.
MEMBER OF THE ROYAL COLLEGE OF SURGEONS.

COMMUNICATED BY
DR. DAVIS.

Read April 8th, 1823.

AT one o'clock in the morning, on the 11th of August, 1822, I was called to Mrs. Welch, a small spare woman, thirty years of age, in her third labour, who was stated by the midwife in attendance, to have been eight hours in strong labour, with an arm presenting.

I found the membranes entire, but apparently containing no liquor amnii. The labour had so far advanced, that the os uteri was obliterated.

The presenting limb proved to be a left knee, and with it the vertex of a head. I attempted to push up the knee so as to cause the head to descend, but ineffectually, owing to the powerful and painful contraction of the uterus. The membranes being unusually tough, and not distended with fluid, were lacerated with some difficulty by the fore-finger introduced between the thigh and leg, so as to hook the child's ham. The knee was then pulled down, and the head at the same time was felt to retire upwards. The body having descended, the right arm was observed to be wedged between the occiput and the symphysis pubis, and was not disengaged without some difficulty after the left arm had been extracted.

No pulsation being perceptible in the cord, I was proceeding, in the usual manner, to introduce two fingers of my left hand into the child's mouth, for the purpose of bringing the chin down to the breast, and hastening the delivery, when I discovered that the hollow of the sacrum was occupied by the head of another child, of which the body was still above the brim of the pelvis. The face of this second child was towards the sacrum, and its occiput was closely applied to the throat of the first-mentioned child. The back of the neck of the latter was closely applied to the symphysis pubis of the mother, and its face to the back of the neck of the child whose body remained within the uterus. With the heads thus situated it would have

been impossible, even had the firm contraction of the uterus been out of the question, to have pushed upwards the one next to the sacrum, without carrying the other before it; and every attempt to extract that which was next to the pubes had the effect of pressing the other so forcibly downwards as to threaten a rupture of the perinæum. In this dilemma I was at first rather doubtful what course to pursue, the case, so far as then known to me, being without a parallel: but after a little consideration, I resolved upon a mode of completing the delivery, which will be described presently, and which may, perhaps, be advantageously adopted on similar occasions in future. Owing to the smallness of the children, it proved unnecessary in the present instance, both heads having been simultaneously expelled from the pelvis by one powerful parturient effort, without any assistance from art. Both children were irrecoverably dead. They appeared to be six weeks or more before the full period. The mother had a smart attack of hysteritis, marked by uterine pain and suppression of the lochia, and accompanied with great excitement of the vascular system, and severe intolerance of light. Three bleedings, amounting together to seventy-six ounces, and free purging, with other appropriate means, removed these symptoms, and she recovered perfectly.

In the Edinburgh Medical and Surgical Journal for January, 1822, a case very similar to this is de-

scribed; in which, however, there was the peculiarity that the head occupying the hollow of the sacrum had its occiput towards that bone, and the head next to the pubes had its face towards the left side of the pelvis.

It is stated, that the head nearest to the sacrum was perforated, with the design of making room, if not for extracting the other head entire, at least to admit of applying the perforator to it also. The latter alternative was found necessary; but even after both heads had been broken down, it was not without considerable force exerted by the operator, as well as by two gentlemen who assisted him, that the head next to the pubes was extracted. The extraction of the other child was then effected without further difficulty. The patient died of inflammation of the uterus and parts lining the pelvis, on the eighteenth day after her delivery, notwithstanding very active treatment and great attention on the part of her medical attendant.

Another case of this kind is related in the Journal de Medicine for November, 1771, in a letter addressed to M. Levret, by M. Eneaux, a surgeon at Dijon, who states, that he succeeded in extracting, with the forceps, the head next to the sacrum, while the body of the other child, which had passed the os externum, was held up in the hands of an assistant over the pubes of the mother. The head of this last child was extracted with ease after the

body of the other. The writer adds, that the child which he extracted with the forceps survived, though not larger than a seven months' child; but that the other died, though corresponding in size to an eight months' child. The mother recovered well. M. Eneaux further states, that he ascertained, by examining the placenta, that both children had been contained in one set of membranes. This, I have some reason to suspect, was likewise the case with the woman whom I delivered; but on this point I cannot speak positively, having inadvertently lost the only opportunity for making the inquiry.

Should a case of this description occur about the seventh month of pregnancy, the mode of delivery by the forceps, which succeeded in the hands of M. Eneaux, might perhaps be attempted; but with twins near the full period of gestation, such a mode of delivery, if practicable at all, would be manifestly incompatible with the lives either of the mother or the children. I may, therefore, perhaps, be allowed to suggest for such cases, the operation which, had the natural efforts proved incompetent to the delivery, I had resolved to perform in the case described above. This consists in detaching the body that has passed the os externum from the head, pushing the detached head further above the brim of the pelvis than it is already situated, and then extracting, with the forceps, the head occupying the hollow of the sacrum, provided the natural

efforts should still prove inadequate. After the extraction of this child, the separated head of the other would remain to be extracted with the forceps, or such other suitable instruments as might be necessary. In this manner the lives of the mother and one of the children would most probably be effectually saved; while the life lost would only be that of a child so situated that it would appear impossible to devise any practicable method for its preservation. Its death must inevitably ensue in a few minutes, even if no operation whatever were attempted, from the pressure that must unavoidably be made upon the umbilical cord; so that there will be no necessity for applying a cutting instrument while the child is alive.

In concluding this account of the present case, I have great pleasure in acknowledging, that, for the opportunity of treating it and others, I am indebted to the friendship of Dr. Davis.

Leicester Square,
March 1st, 1823.

A CASE

OF

ASCITES,

CONNECTED WITH UTERO-GESTATION,

SUCCESSFULLY TREATED BY OPERATION.

By GEORGE LANGSTAFF, Esq.

SURGEON.

Read May 6, 1823.

AS the following case is not, I believe, one of very common occurrence, and, in a practical point of view, may be considered valuable by those who practise Midwifery, I am induced to give a brief history of it to this Society.

A lady, thirty-nine years of age, of good constitution, who had given birth to eight children, became again pregnant. At a very early period she appeared unusually large, and felt uncomfortable, and not disposed to take her accustomed exercise. At the fifth month of utero-gestation, when she became sensible of having what is termed quickened, the abdominal enlargement was so considerable as to occasion her friends to remark that her period of pregnancy was further advanced than she supposed;

but, having been always correct in this respect on former occasions, she could only account for her grotesque size by supposing she might again have twins, which had once before happened. During the latter part of the sixth month and first week of the seventh, the pains in the abdomen, and distention, were so distressing as to require general and local blood-letting, and a blister to the abdomen. From the œdematous state of the legs and thighs, and also from the sense of fluctuation imparted to the hand by sounding the abdomen, it was pretty evident that there was fluid in the abdominal sac, yet the sensation of fluctuation could not be distinctly felt in all parts of the abdomen alike; it was more evident in the upper parts of the hypochondriac regions, particularly in the right side, where there was an irregularity given to the rotundity of the abdomen. Calomel, digitalis, and squills were employed, but these made no impression on the disease. The dropsical symptoms becoming more urgent, and the life of the patient in danger, it now became a very serious point to decide whether premature labour should be brought on, or the operation of tapping performed.

At my request, Dr. Farre was consulted. That gentleman considered the important nature of the case seriously, and gave it as his opinion that premature labour should be preferred to drawing off the fluid collected in the abdomen; but expressed a desire to have this op[illegible]s long as

possible with safety to the patient, that the chance might be given of preserving the life of the child.

The unwieldy state of the abdomen becoming daily more annoying, and there having been for a long time an inability to recline in the horizontal posture, the legs and thighs increased greatly in size, and the misery of the patient was indescribable. Doctor Davis was at this period called in; he took particular pains to consider all the different points of the case, and decided in favour of bringing on premature labour.

On the 19th of March, the liquor amnii was let off; it was small in quantity. On the following day, the symptoms occasioned by ascites were more distressing, the abdominal integuments much discoloured, the constitutional powers evidently sinking, and there were no signs of labour commencing. The patient, as well as her friends, seemed convinced that her dissolution was rapidly approaching, and would scarcely listen to any proposal for the attempt to relieve her sufferings. I strongly urged the necessity of another consultation, which was positively refused. I now thought it my duty to propose letting out the fluid collected in the peritoneal sac, and at length the operation was agreed to, but not without my having promised a more successful issue than the nature of the case warranted; yet I thought my conduct justifiable.

On the 20th of March, I cut down to the peritoneum, about two inches below the umbilicus, then carefully perforated that membrane with a moderate sized instrument, such as is commonly employed in performing the operation of paracentesis abdominis, taking especial care to introduce the point of the trocar only a short distance beyond its shoulder, that the uterus might not be injured; the trocar was then withdrawn, and the canula pushed a little further into the abdomen. The fluid, which flowed very freely, was transparent; when about ten pints of it had flowed, the stream was checked by the anterior part of the uterus coming in contact with the point of the canula; this occasioned so much pain as to oblige me to withdraw it, hoping that by means of a bandage round the abdomen, assisted by slight pressure on each side with the hands, the remainder of the fluid might be evacuated. In this, however, I was disappointed, as the patient could not bear the necessary pressure. I therefore introduced a moderately large, smooth, soft, elastic gum catheter through the opening, which passed downwards for several inches between the anterior part of the peritoneum and uterus, and thus drew off the remainder of the fluid. The whole amounted to twenty-five pints. About eight hours after the operation, pain was complained of over the whole of the abdomen, the patient was restless, skin hot, pulse 120, not full but wiry. Twenty-four ounces of blood were drawn from a vein in the arm, which was considerably more than the blood usu-

ally is when taken during pregnancy. Saline aperient medicines were prescribed, and five grains of calomel, with the same quantity of the extract of hyoscyamus at bed-time.

March 21st. The bowels were freely relieved by the medicine, anxiety and restlessness much the same as yesterday, skin hot, tongue white and dry, pulse 100, rather full and hard, urine high coloured and deficient in quantity, and there was pain in the abdomen. Twenty leeches were applied to the abdomen; the discharge of blood from the orifices were considerable.

March 22d. Although the bowels were freely open, and the urine increased in quantity, the pain and tenderness in the abdomen continued; pulse 110, fuller and harder than yesterday; tongue very white and dry. Thirty ounces of blood were taken from the arm, which was more highly inflamed than that drawn on the 20th. Saline medicines with digitalis were ordered, and fifteen drops of the liquor opii sedativus at bed-time.

March 23d. She passed a more comfortable night than she had experienced for several weeks; the pain in the abdomen was considerably diminished, and she could bear slight pressure with the hand; pulse 94, much reduced in power, tongue not so dry. Towards evening uterine pains began, and she was delivered of a dead child about four hours

after the commencement of the labour. The child, which did not appear to have advanced beyond the seventh month, had been dead several days, as the skin was much discoloured, and the cuticle separated easily from the cutis. The labour was natural; the placenta was not expelled for upwards of an hour after the birth of the child, although correct pressure was applied to the abdomen to excite the action of the uterus. I fully anticipated uterine hæmorrhage after the expulsion of the placenta, but the discharge was not profuse. Six hours after the labour, fifteen drops of the liquor opii sedativus were given; the patient slept comfortably several hours; since that time, strict attention to regimen and suitable remedies have been enjoined, and I feel great satisfaction in saying that I now (April 12th) consider the patient out of danger, and there does not seem any reason to dread re-accumulation of fluid in the peritoneal sac.

OBSERVATIONS.

During extensive practice for the last twenty years, I have occasionally seen slight cases of ascites, and frequently severe cases of œdema, connected with, and occasioned by the morbid changes in the constitution which utero-gestation had produced. They all terminated favourably by suitable medical treatment, either previous to, or soon after parturition. The case I now have the honour of presenting to this Society, gave me particular anx-

iety during my attendance, not only from its novelty, but from the high esteem I had for the family of this lady. I spared no pains in obtaining the opinions of some of the most scientific and distinguished accoucheurs in London, particularly those who have been for a number of years extensively engaged in this department. I also conversed on the nature of the case, and proper mode of treatment, with some of the most eminent surgeons and pathologists, none of whom unfortunately had ever seen a case of dropsy during pregnancy that required tapping; and all seemed too cautious to sanction this operation, lest it should occasion, or be succeeded by puerperal inflammation, which would in all probability destroy life. I likewise referred to a great number of books on Midwifery, published in this country, without finding any thing on this point satisfactory or encouraging. In the celebrated Dr. Denman's Introduction to the Practice of Midwifery, vol. 1st, page 290, 4th edition, I read as follows:—

"There have been a few instances of women with child who have had a true ascites; and those who have an ascites sometimes become pregnant. Some cases are recorded, and many reported, in which the mode of treatment enjoined has been founded on an erroneous opinion of these two situations; that is, of a dropsy being mistaken for pregnancy, and pregnancy for a dropsy. The former is not productive of mischief in any other way, than

by delaying the use of such means as might be considered likely to cure the disease if administered in its early state. But the consequences of the second error have been deplorable. For, if any active remedies are used on the presumption of a dropsy, the child will of necessity be often destroyed, and an abortion or premature labour occasioned; and, when the operation of the paracentesis has been performed, it hath been known to prove fatal to the mother and child, always reflecting great discredit both upon the operator and profession. It, therefore, seems necessary to establish this general rule; that no woman, at a time of life, or under circumstances which, in the most distant manner, subject her to a suspicion of pregnancy, should ever be tapped, or otherwise treated for a dropsy, till by examination per vaginam, or by waiting a due time, we are convinced that she is not pregnant; even though she may have before undergone the operation."

The opinion above quoted would, perhaps, at one period of my life, have deterred me from operating in such a case; but as tapping seemed, in this instance, the only chance to save the patient's life, and not having so much dread of its consequences as were anticipated by others, although well aware of the susceptibility of the peritoneum to take on inflammatory action during the last stage of gestation, and soon after parturition, yet I proposed the operation with great hope of suc-

cess, after reading a case of the kind treated successfully by the celebrated Scarpa, whose name will be revered by posterity as a distinguished surgeon, anatomist, and pathologist.

The case above alluded to is given, accompanied by Scarpa's Remarks in the first volume of the Quarterly Journal of Foreign Medicine and Surgery, page 249.

From the favorable result of these cases I should, in a similar one, be induced to recommend tapping before the hydropic symptoms became so distressing: and from what I have seen of dropsy occasioned by plethora, or an inflammatory state of the arteries, I should expect that the further effusion of the fluid into the peritoneal sac during pregnancy, might, if detected before the accumulation was considerable, be prevented by blood-letting; and, ultimately, the absorbents induced by proper treatment to carry of the fluid. But this fortunate termination could only be expected where effusion was merely the result of simple inflammatory action, unconnected with visceral disease. On this subject, however, I shall say more when I publish the History of my Museum, which I have in a state of forwardness.

FURTHER ACCOUNT

OF THE

EXTRACTION OF CALCULI

FROM

THE BLADDER,

WITHOUT THE USE OF ANY CUTTING INSTRUMENT.

By Sir ASTLEY COOPER, Bart., F.R.S.

SURGEON TO HIS MAJESTY, AND SURGEON TO GUY'S HOSPITAL.

Read Nov. 19, 1822.

IN a former of Volume of these Transactions, I had the honour of stating that an idea had occurred to my mind, that calculi might be extracted from the bladder by forceps introduced by the urethra; and that, by the ingenuity of Mr. Weiss, Surgeons' Instrument Maker, I was provided with an instrument well calculated to carry my idea into effect. From the Rev. Mr. Buller, of Barnwell, Cambridgeshire, I extracted more than eighty calculi; but I had not flattered myself with the hope that opportunities of using this mode of relief would often occur, and I have, therefore, received great additional gratification from being able so soon to

add three cases to my former account, for one of which I am indebted to my excellent and intelligent friend Mr. Brodie.

Saville Row, Nov. 10, 1822.

DEAR SIR,

I HAVE much pleasure in sending you the following history of a case, in which I was led to adopt a method of treatment which was originally proposed, and successfully practised, by yourself.

Your's truly,

B. C. BRODIE.

To Sir Astley Cooper, Bart.

A gentleman, seventy years of age, came to London in the spring of the present year, complaining of the following symptoms. He had frequent desire to void his urine; the act of voiding it was attended with more or less difficulty, so that he sometimes required the introduction of the catheter; he had a good deal of pain during and after each attempt to make water; and, at different periods, he had passed several small oval calculi. He consulted Dr. Baillie, who referred him to me, for the purpose of having his bladder examined. On introducing a sound, some calculi were distinctly felt, previous to the instrument entering the bladder; and on an examination being made from the rectum, a number of calculi were perceived in the situation of the prostate gland, apparently contained in one cyst, and sliding on each other, under the pressure

of the finger. In a consultation between Dr. Baillie and myself, it was determined that I should endeavour to extract the calculi, which seemed to be of a moderate size, in the manner which you have described in the XIth Volume of the Medico-Chirurgical Transactions. On the first introduction of a pair of forceps, made by Mr. Weiss, I removed two very small calculi only; but, in the second attempt, I was more successful, and as many as six or seven were brought away, of a larger size. The operation was repeated about ten or twelve times, at various intervals between the middle of June and the end of July; and, in all, about sixty calculi were extracted. These were of various sizes, a few not larger than a pin's head, a great number of the size of ordinary peas, but of an oval shape, and some of them considerably larger. The largest measured half an inch in one diameter, and five-eighths of an inch in the other, and had four sides and angles; and it was not until after two or three trials that I succeeded in removing it. In each of the unsuccessful trials some small fragments were broken off by the instrument, and it was in consequence of its being thus diminished in size that I was at last enabled to extract it. At the end of July, the symptoms were very much relieved, and no more calculi could be discovered, either with the sound, or with the finger from the rectum. There was, however, still some degree of irritation, which led to the suspicion of some concretions

being still left. Unfortunately our patient's private affairs prevented his remaining longer at this time in London, and he set off on his journey homeward. When he had travelled about thirty miles, he was seized with some difficulty in voiding his urine, which led him to return to London, and apply to me again. I discovered a calculus lodged in the membranous part of the urethra, which was readily extracted. It was of an oval form, about the size of a small horse-bean. On the following day, he resumed his journey.

On the 11th of August, he wrote to me from his own house, in the northern part of the kingdom, that he was again troubled with much sense of irritation, that he had a good deal of difficulty in making water, and that the urine deposited the same ropy mucus as formerly. In consequence, I recommended him to apply to an eminent surgeon at Liverpool, for the purpose of having it ascertained whether any calculi remained, and that those might be extracted in the same manner as the others. Since then, however, I have received the following communication from him, dated the 11th of October: "Since I last wrote to you, I have passed three very large round calculi, which, for some time, tormented me much. One of them was squeezed out of the urethra by the finger, the other two were passed in the same night in making water. I have, since that time (which was

nearly a month ago), been very much easier, and continue so, although I believe more calculi yet remain, which, in time, I trust, may pass off without my having again recourse to the instrument."

The following case is in part detailed from the patient's account of his symptoms, and in part from the statement of Sir Gilbert Blane, who is the patient's physician.

CASE II.

SIR WILLIAM B——'S ACCOUNT OF HIS CASE.

"Sir William B. is in his sixty-seventh year: he suffered much at times from long and severe attacks of gout from about his thirty-fifth to his sixtieth year; since which period, the attacks have been much less frequent, much mitigated, and of short continuance. He thinks he first perceived red gravel or sand to come from him occasionally, soon after a long fit of the gout, about seven or eight years since, but did not suffer much inconvenience from it. About four years since, he passed pieces of gravel at different times, and has continued occasionally to do so ever since, sometimes larger than a pea, but generally of an oblong shape. When they occasioned any stoppage in the passage, he used a hot bath at 94°, and drank plen-

tifully of some diluting drink, which, after a little time, succeeded. In the summer of the year 1820, having had occasion to use a great deal of walking exercise in London for three or four days, he was much surprised on passing, first, a considerable quantity of very dark stuff, nearly like coffee grounds, and afterwards, a considerable quantity of what appeared chiefly blood. He did not experience any pain of consequence with this, and, by the following day, his urine was as clear as before. Upon going into the country, he found that if he rode fast at any time, it brought on the passing of the dark stuff, and afterwards, if persisted in, of blood. By degrees he gave up riding, and finally ceased to ride about Christmas last; and finding the same effects to arise, in a slighter degree, from walking much, he has very much given up that also for the last six months. Sir Astley Cooper and Sir Gilbert Blane attended him for these symptoms in June and July, 1821, when he left London for Ireland. Whilst there, he continued to experience the same inconvenience as before, with but little pain, and the same on his return to London. Early in June last, he called on Sir Astley Cooper, to say he was going again to Ireland, and wished to have some conversation with him, when Sir Astle Cooper advised his being sounded, which he then was, and it was ascertained that there was a stone. As it appeared to Sir Astley Cooper to be a small one, he proposed trying to extract it, and, on the fourth trial, with intervals of a week or

so between them, a stone weighing seventeen grains and a half was extracted on the 18th of July. About three weeks after, Sir William, having some fears that there still remained some stone behind, again applied to Sir Astley Cooper, who, upon sounding, found that such was the case; and on making at that time, at his own house, an attempt to extract, he brought it part of the way, but found it too large to bring forward, and therefore returned it; and as soon after as the parts would permit, he commenced enlarging the passage by bougies, which he continued at intervals for nearly a fortnight, and then extracted a stone weighing fifty-four grains, on the 28th of August, 1822."

Sir William B. suffered pain in making water, swelling of the corpus spongiosum at the scrotum, with considerable urethral discharge, until September 23d, when the symptoms subsided under the application of fomentations and poultices.

When the size of the stone is observed, it will not excite surprise that I had considerable difficulty in extracting the larger, which weighed fifty-four grains, and which I have sent for the Society's inspection. It was in that part of the urethra near the glans that the chief impediment was found; and if I had thought it proper to do so, I could have easily removed it from thence by incision, but I

preferred completing the extraction without occasioning a wound; yet I am now disposed to believe that, in a stone of equal magnitude, it would be better to make a small incision into the urethra anteriorly to the scrotum, than employ force for the extraction of the stone through this narrower part of the urethra.

A. C.

Sackville Street, 11th Dec., 1822.

DEAR SIR,

In compliance with the wish which you expressed that I would state what I knew concerning the case of Sir William B., the interesting subject from whom Sir Astley Cooper had extracted, by the urethra, the largest calculus which had ever been removed from the bladder in that manner, I have consulted my notes concerning it. I find that I have, at various times, attended that gentleman for more than twenty years. He states himself, from memory, that he had been subject to gravel for seven years, which accords with my notes, the first appearance of the complaint having been in July, 1815. He found speedy and effectual relief from a short course, consisting of two scruples of subcarbonate of potash twice a day, half neutralized with lemon juice and combined with hemlock and extract of poppy*. He had returns of it in

* See this method of cure fully detailed in an article in the Third Volume of Transactions of a Society for the Improvement

the three following years, all of which were removed by the like means, except that in one of the attacks, magnesia was substituted for the potash. After this, he remained nearly free from the complaint for two years, but it returned in the month of May, 1820. The same remedies were had recourse to, but without the same success, for after several weeks' trial, the symptoms were rather aggravated. I then found that I had not been sufficiently vigilant in examining the colour of the sand; for though it was red at its re-appearance on this occasion as it had been on all the former occasions, I now found, on inspection, that it consisted of sand of white colour. This accounted for the want of success from the alkaline medicines, and immediately the muriatic acid was ordered in the dose of seven minims, combined with seven minims of vinum opii, three times a day, duly diluted. Sensible relief was experienced in the course of nine days, and, in fourteen days, he was free from complaint. In the course of the following year, in place of sand, small *calculi* were passed, after pretty severe pains in the region of the kidneys. These calculi were red internally, and white on their external parts. But having passed great part of his time in Ireland in the course of this year, the history of the treatment is not well ascertained; but the history of the symptoms is very distinctly related by

of Medical and Chirurgical Knowledge, 1812, by Sir Gilbert Blane. Also in an article in Select Dissertations by the same author, Lond. 1822.

himself, till the period of the operations detailed by Sir Astley Cooper.

The history of this case, will, at first sight, suggest doubts unfavourable to the character of the remedies that have been employed in the treatment, for it cannot be denied that, in spite of them, concretions had formed, of such formidable magnitude, that had it not been for the new method so happily conceived and so skilfully executed by Sir Astley Cooper, the patient would have been subjected either to the sad sufferings of the stone, or to the pain and danger of lithotomy. But in answer, let it be remarked, first, that the relief from the remedies was so speedy and so frequent that no doubt can be entertained of their efficacy; and if the prosecution and seasonable repetition of them had not been interrupted by his frequent and long residences in Ireland and on the continent, there is good reason to believe that the cure, in place of temporary, would have proved permanent and radical, as I have observed it to be in similar cases which had been perseveringly treated in this manner. Secondly, much suffering was prevented by the imperfect use of these remedies; for upon questioning him, he says, that he never had any real pain in the bladder, but only an uneasiness, and that the only suffering deserving the name of pain was in the kidneys, and, on one occasion, in the urethra, from the passing of a stone, the only one that had a rough surface. It is no small recom-

mendation of these remedies, that by preventing additional accretions, the stone becomes smooth, and gives little or no pain, as was eminently exemplified in the case of Lord Walpole, related by Dr. Whytt, about seventy years ago, when the caustic alkalies, soap and lime water, were first introduced. In this case the freedom from pain was such for several years before death, that the stone was supposed to have been dissolved; but a pretty large one, with a smooth surface, was found after death.

Though there may be occasional failures, therefore, in the full effect of these remedies, such as are incident to all remedies, let us not undervalue the new resources which have recently been devised by chemistry and surgical skill, for the relief of one of the most painful, and, hitherto, untractable maladies incident to humanity. Mankind is deeply indebted to Dr. Wollaston, for the clear light in which he has placed the diversity in the composition of urinary concretions, upon which is founded a corresponding diversity, and even contrast, in the quality of the remedies. Nor does the world owe less to Sir Astley Cooper, for this new method of extracting *calculi* of such size by the urethra, by which, in innumerable instances hereafter, the most severe suffering and dangers may be averted; and this method has this advantage over internal remedies, that it is applicable to *calculi* of every composition, whereas there are certain species of them, such as those composed of oxalite of lime, upon

which neither alkaline nor acid medicines produce any effect.

A question arises on a collateral circumstance in the history of this case, namely, whether or not the great and long-continued alleviation of the gouty complaints may be attributed to the use of the alkaline remedies?

I am, dear Sir,
with great regard,
Your most faithful and obedient Servant,
GILBERT BLANE.

To Dr. Cooke,
President of the Medico-Chirurgical Society.

CASE III.

Mr. William King, aged sixty-six, mariner, residing at Rochester, was sent to me by Mr. Newsom, surgeon, of Rochester, on account of his having symptoms of the stone.

He came to London on the 29th of October, 1822, and on the 30th, he visited me. I sounded him, and found that he had, as Mr. Newsom supposed, calculi in the bladder. I passed the urethral forceps into the bladder, and, in a few minutes, extracted four calculi; and although I could still perceive that some remained in the bladder, I did

not chuse to risk the production of any considerable degree of irritation, but advised him to come on November 1, to have the operation repeated.

On the 1st of November, I extracted three calculi; on the 4th, five more; on the 7th, twelve calculi; on the 11th, two; and on the 13th, three more. I then examined the bladder with care, but could not perceive any more stones, and even before the removal of the last, he had experienced considerable diminution of the pain in making water, and difficulty in passing it.

It is delightful to hear the expressions of gratitude which this patient pours forth for the relief which he has experienced from these operations, under which he has suffered but a slight degree of pain, and has never, for a moment, been confined from whatever exercise he was disposed to take.

Some years ago he passed red sand (uric acid), but for several months before he had symptoms of the stone, he has not perceived any.

From Mr. Brodie's patient two other calculi have been since extracted by the same means: and I have lately removed from a young person, a patient of Mr. Rutherford in Radcliffe-highway, of

the name of Errington, a calculus of moderate size, and enabled two others to pass by withdrawing the instrument in its dilated state, and thus extended the urethra in such a degree, that the stones passed, in the afternoon of the same day, in a copious discharge of the urine.

I have heard that it has been stated that there was no novelty either in this idea or in the instrument. To this I have only to observe, that if the idea had previously occurred to any individual, he had so far buried it in his bosom, that I had never heard of it; and as to the instrument, I am quite sure that Mr. Weiss consulted no musty volume for its formation, for so soon as I mentioned my wish he should construct a pair of forceps by dividing a sound in its middle, and giving it a joint two inches from its end, he, without quitting me, observed, that he should make them to open in the mode which the plate in the former volume represents. Mr. Weiss has a strong and ingenious mind, and does not use petty artifices to obtain employment or character. But let us for a moment suppose (what I do not believe), that the idea had occurred to others, and the instrument had been made centuries ago, what are we to say of the apathy of those bright ornaments of their profession, Cheselden, Pott, Hunter, Cline, Home, Blizard, &c., who, if they had heard of such an instrument, had never employed it?

A. C.

Result of the Analysis of the Calculi, made by Dr. Prout.

THE largest of these calculi, when entire, weighed fifty-four grains, the other, seventeen grains. They are both of the same composition, and consist essentially of lithic acid; they also contain ammonia, a little fixed alkali, very minute quantities of the phosphate of lime and triple phosphate of magnesia and ammonia, and, probably, still more minute quantities of the oxalate of lime. The presence of oxalate of lime, however, is rather to be considered as inferred than demonstrated; such calculi, when analysed on a larger scale, being generally found to contain more or less of this principle. The ammonia and fixed alkali exist of course, in union with the lithic acid, and the fixed alkali was, very probably, derived from the medicines which had been exhibited during the promotion of the calculi. Both these alkaline principles, as well as the phosphates, are chiefly confined to the paler coloured laminæ with which the calculi are stratified.

The nuclei of both calculi resemble each other, and consist, as is usual, of a congeries of highly-coloured nodules, or masses of lithic acid, loosely agglutinated together, and which, as the stone dries, contract, and crack into several portions. Hence, the nuclei of such calculi usually drop out, or fall to pieces, when they are cut through, as was particularly the case with that of the smaller of the present two calculi.

SOME OBSERVATIONS

RELATING TO THE

POWERS OF CIRCULATION

AND THE

STATE OF THE VESSELS

IN

AN INFLAMED PART.

By A. P. W. PHILIP, M.D., F.R.S. Ed., &c.

COMMUNICATED BY

Mr. EARLE.

Read June 17, 1823.

I AM induced to trouble the Society with the following observations relating to the powers of circulation, because opinions respecting them, which appear to be equally inconsistent with our knowledge of the animal economy and the common law of mechanics, have lately made a considerable impression on some of the medical men of this country. These opinions appear to have been originally suggested by a love of novelty, and to have become current with many for no other reason than that nobody has been at the trouble to exa-

mine the grounds on which they rest. This subject naturally leads to the much-disputed question of the nature of inflammation (and disputed it must ever remain while our opinions respecting the powers of circulation are so vague as they at present appear to be). The reader will judge from the facts which will be laid before him, how far our difference of opinion arises from the real deficiency of our knowledge, or a careless application of it. Such expressions as, that the subject is very obscure, that our knowledge of it is very imperfect, &c., are often employed to save us the trouble of enquiring what the state of our knowledge actually is.

Much has lately been said of the dilating power of the heart, and what has been called the resilience of the lungs. Those powers are not imaginary. Very simple experiments prove their existence; and we are indebted to Dr. Carson for having particularly called our attention to them: but I believe it will be with some surprise that every one will, for the first time, examine the foundation of the inferences drawn from them, when it is considered by what men these inferences have been sanctioned.

An experiment made many years ago by Dr. James Johnson, demonstrates, in a very satisfactory way, the dilating power of the heart. He immersed in water the heart of a turtle newly killed, and could, from the tinge given by the blood, ob-

serve it continually expelling, in the systole, the water it had drawn in during the diastole. But if we grasp the heart either of a warm or cold blooded animal, we find that, during the diastole, it offers little if any greater resistance to the hand than other muscles in a state of relaxation do. In short, it is quite soft and compressible, till the systole recurs: from which, it is evident, that its dilating power is very small. It is also to be observed that the dilating power seems chiefly to reside in the ventricle, the auricle being much thinner, and more inclined to collapse. Nor will the dilating power of the heart be much aided by what Dr. Carson calls the resilient power of the lungs. This power cannot operate in many of the lower classes of animals, or in the fœtal state in any class; and in the perfect animal of the higher classes, its effect is very inconsiderable. It appears, from an experiment related in the 111th page of Dr. Carson's Treatise, that, even in the bullock, it is not equal to the pressure of a column of water of ten inches. It does not indeed appear, from the experiments of Dr. Carson, how much the effect he observed depends on what he calls the resilience, or merely on the weight of the lungs. It is evident that, as far as this power goes, whether it depends on the weight or resilience of the lungs, it tends to dilate the heart; the atmosphere, through the medium of the blood, pressing as much on the internal surfaces of the heart as on the external surface of the chest.

But, admitting that the dilating power of the heart, and tendency of the lungs to collapse, are sufficient in degree to support the motion of the blood in the veins, another insurmountable and surely most evident objection to the hypothesis, presents itself. What is the effect of an exhausting syringe adapted to a tube filled with a fluid? If the fluid must rise before it can enter the syringe, after the first portion has entered it, either the fluid continues to rise, or the sides of the tube begin to collapse. If the sides of the tube are firm enough to resist a pressure equal to that of the column of fluid to be raised, it rises; if not, the tube collapses. Could the sides of the veins resist a pressure equal to that of the column of fluid to be raised, even if they were not constantly pressed upon by the surrounding parts? Nay, so small is their elastic power, that they collapse by their own weight as soon as emptied. Yet it is through these tubes that a column of blood of many feet is to be raised by suction! Besides, the elastic power of the ventricle can have no operation on the veins, the auricle being interposed between them, and contracting during the diastole of the ventricle.

What purpose then is served by the dilating power of the ventricle increased by the tendency of the lungs to collapse? It favours the entrance of the blood suddenly propelled into it by the contraction of the auricle; and the degree of dilating power is well proportioned to this office. Without

this dilating power, the tendency of the ventricle would be to remain in a state of collapse after the systole, and part of the power of the auricle would be expended in dilating the ventricle. Here, as in many other instances, both in man and the inferior animals, we see nature saving the muscular, by the substitution of the elastic power. The latter is the simplest, and its action tends little to exhaust it. In like manner the arteries are rendered elastic, to favour the ingress of the blood on the contraction of the ventricle. It is evident that a greater power must have been bestowed on the ventricle had the arteries been wholly inelastic. Their elasticity by resisting the pressure of the surrounding parts, and thus tending to preserve a uniformity of caliber, facilitates both the ingress and passage of the blood suddenly thrown into them. Had the blood entered by a continued stream, and been carried on merely by the power of the vessels themselves, this elasticity would not only have been of little use, but evidently injurious, as far as it tended to impede the muscular, or by whatever other name we choose to call that power by which the blood is propelled by the vessels. Thus it is that little elastic power is bestowed on the veins, which we shall find are unassisted in the propulsion of their contents.

But as wonderful powers have been ascribed to the muscular, as to the elastic power of the ventricle, it has been seriously maintained, and that by authors of respectability, that the circulation is sup-

ported by the muscular power of this organ alone. Have those who maintain this position made even the rudest calculation of the degree of resistance to be overcome in driving the blood through two capillary systems* at such a rate, that, in any given time, the same quantity shall be delivered by the veins, which is thrown into the arteries? Have they made any estimate of the strength necessary in the different sets of vessels, and, particularly, in the larger arteries, to sustain a power capable of overcoming this resistance? Let them give to the heart what imaginary power they will, they cannot make this power greater than the coats of the vessels will bear without rupture †.

Let us turn from hypothesis to simple matter of fact. If the motion of the blood be maintained by the power of the heart alone, it will, of course, cease when this power is destroyed.

A ligature was thrown round the vessels attached to the heart of a frog, and the heart was then cut out. On bringing the web of one of the hind legs

* It is to be recollected that, in an important part of the body, the blood is, for the second time, distributed through the capillaries, before it returns to the heart.

† Much has been said of the incompressible nature of the blood, and the consequent effect of each additional quantity thrown into the arteries; but were the blood absolutely incompressible, which we now know not to be the case, what has been said on this head could only be correct on the supposition of the vessels also being absolutely unyielding.

before the microscope, I found the circulation in it vigorous. I could not distinguish it from that in the web of a healthy frog. It continued in this state for many minutes, and, at length, gradually became more languid *.

A rabbit, about two months old, was killed by a blow on the occiput. The chest was then laid open, and a ligature thrown round the aorta. Part of the mesentery was now brought before the microscope, and both the gentleman who assisted me, Mr. Sheppard, and myself, saw the blood moving in it with great velocity. I had many times, with the assistance of the microscope, seen the circulation in the healthy rabbit, and could not perceive that the loss of the power of the heart at all affected it for the space of many minutes †.

It appears from these experiments, that the motion of the blood in the capillaries, that is, those vessels which are too small to be distinguished by the naked eye, has no direct dependance on the action of the heart. Does it depend on a power remaining in the larger vessels, or on the power of the capillaries themselves? This point also may easily be determined by direct experiment. If it depend on the former, it will be uninfluenced by stimulants and sedatives acting on the capil-

* Experimental Inquiry, 2d Edit., p. 91.

† Experimental Inquiry, 2d Edit., pp. 194 and 195.

laries; if on the latter, the velocity of the blood will be greater or less according as they are more or less excited.

I found from many experiments to which I shall again have occasion to refer that the velocity of the blood in the capillaries is immediately influenced by the state of these vessels. When they were stimulated by the concentrated rays of the sun, the application of spirits of wine, or gentle friction, the velocity of the blood in them was immediately, and, by the two first, to a great degree increased *. When the power of the capillaries was destroyed, even in the perfect animal, by the direct application of an infusion of opium or tobacco to them, the motion of the blood through them immediately ceased†, so little influence has the action of the heart and larger arteries on the circulation in these vessels: and in many experiments, where the motion of the blood in the capillaries had become very languid, it was accelerated, and even renewed when it had ceased, by stimuli applied to them ‡.

Thus, it appears, that the propulsion of the blood

* Introduction to my Treatise on Symptomatic Fevers, 4th Edit., pp. 15 and 16.

† Experimental Inquiry, 2d Edit., p. 133.

‡ Introduction to a Treatise on Symptomatic Fevers, 4th Edit., pp. 15 and 16. The motion of the blood in the capillaries is quite uniform. I could never observe that the contractions of the heart in the least degree influenced it.

through the capillaries, is the function of these vessels themselves, and has no further dependance on the heart, than that a due supply of blood to them cannot long be obtained after the action of this organ has ceased. The motion of the blood in the capillaries does not wholly cease, in internal parts, for several hours after the power of the heart is destroyed*. It arises from this cause, that the larger arteries of animals which have been dead for some time, are found empty. That the continued action of the capillaries must readily empty them, will be evident, when we recollect how much the sum of the areas of the branches of an artery, exceeds the area of its trunk †.

The effect of the larger vessels in supporting the motion of the blood, cannot be so easily demonstrated as that of the capillaries; but the reader will find, from many experiments, detailed in various works, and particularly in the introduction to Dr. Hastings's work on the Inflammation of the Mucus Membrane of the Lungs, that they possess a contractile power, which obeys both chemical and mechanical stimulants, and for what purpose they are en-

* Experimental Inquiry, 2d Edit., p. 196.

† The instantaneous destruction of the nervous power immediately destroys the power of the capillaries, (Exper. Inq. 2d. Ed. Exp. 28 and 29). The arteries are not found empty after death by lightning, although their elasticity is unimpaired. See a paper on the vacuity of the arteries after death by Dr. Fennel in the Philadelphia Journal, No. 2.

dowed with such power, if not for the propulsion of the blood, it would be difficult to understand. Whatever may be said of the larger arteries, as the motion of the blood in the capillaries is independent of the power of the heart, that in the larger veins must either depend on their own power, or on the impulse given to the blood by the capillaries, a position which nobody will maintain. If then the blood is carried on in the capillaries and larger veins by the power of these vessels themselves, and we find, from direct experiment, that the arteries possess a similar power, we can hardly conceive that this power is not employed for the same purpose, in aid of the impulse given by the heart. It is surely more consistent with every thing we know of the animal economy, to suppose that the vessels should assist in the propulsion of their contents, than that these should be driven through them as through inanimate tubes.

Whether the power of the vessels be a muscular power or not, a question of subordinate consequence in a pathological point of view, must chiefly rest on analogy; but there can hardly be a stronger analogy than exists in favour of this opinion, to say nothing of the fibrous appearance observed in some of the larger vessels. The power of the capillaries obeys the same laws with that of the heart. The capillaries and the heart are excited by the same stimulant, and for the same purpose—the propulsion of the blood. These vessels are affected in

the same way as the heart, by other agents, directly applied to them, whether stimulant or sedative*. They bear the same relation to the nervous system, their function being like that of the heart independent of that system†, but capable of being increased or diminished, or even destroyed through it‡.

The direct influence of the nervous system on the capillaries, explains many of the phenomena both of health and disease. Hence the flushing and paleness of particular parts, especially of the face, produced by affections of the mind, which cannot depend on the general state of the sanguiferous system. Hence the influence of different states of the nervous system on the various secreting organs, &c.

There is no disease in which the influence of the nervous system on the capillary vessels is so striking as in inflammation; we see it made to recede from one part, and attack another, and modified in all its stages by causes whose operation is confined to the nervous system alone.

I shall employ the remaining part of this paper in an attempt to ascertain how far a review of the

* Treatise on Symptomatic Fevers, 4th Edit., pp. 15 and 16, and Experimental Inquiry, 2d Edit., p. 133.

† Experimental Inquiry, 2d Edit., p. 77.

‡ *Ibid*, p. 92, *et seq*.

facts we possess enables us to advance in explaining the phenomena of this disease; which, both from the nature of the disease itself, and its intimate connection with nine-tenths of all the diseases we are subject to, may be regarded as the most important object of pathological research: and yet it is that on which, as far as I am capable of judging, there has been a greater display of fallacious reasoning, and a greater disregard of facts, than on any other subject with which I am acquainted.

There is no difficulty, with the aid of the microscope, in perceiving the first step towards a state of inflammation. It is well known, that exposure to the air alone, is sufficient to produce inflammation in the internal membranes of warm-blooded animals. This is also the case in the fin of some kinds of fish. The lampern was the fish I employed, and in the warm-blooded animal I employed the mesentery of the rabbit.

On bringing either of these membranes before the microscope, we see a network of vessels, many capable of transmitting the globules of blood only one by one where they follow each other in rapid succession. After the part has remained exposed to the air for some time, the globules begin to move through these vessels with less rapidity, and in proportion as this happens, we perceive the diameter of the vessels enlarging, till that which could admit

of only one globule now admits of several. As the motion of the globules languishes, and their number increases, their colour becomes conspicuous, which it is not while they pass in smaller number and with greater rapidity. At the same time that these changes take place we find the number of vessels, capable of transmitting red globules, greatly increased, so that the vessels which, in the healthy state, transmitted only the colourless, are now so much distended as to admit the grosser parts of the blood. From these two causes the part assumes a redder appearance than natural, and also acquires a greater bulk; and the latter seems further increased by the distension of vessels still too small to transmit the red globules; for the interstices of the red vessels are now more opake than before the morbid distension took place, without the appearance of extravasation of any kind.

While these changes, which may be distinctly seen with the assistance of the microscope, are going on, the part to the naked eye becomes inflamed, more opake, and thicker.

Such then are the changes which take place in the commencement and progress of inflammation. The blood in the capillaries begins to move more slowly; these vessels in the same proportion suffering a degree of morbid distension: and this often goes on till they, by many times, exceed the healthy

size, and the blood in the most distended vessels ceases to move altogether.

The motion of the blood in the capillaries we have just seen proved, by direct experiment, to depend on the action of these vessels themselves. When it fails therefore we necessarily infer that their action is failing in the same proportion; and this inference is confirmed by their suffering themselves to be morbidly distended by the *vis a tergo*, an effect which equally proves their loss of power. It signifies not by what means the power of the capillaries is impaired*, whether by mechanical or chemical injury, whether by a cause operating slowly or suddenly. Any cause impairing their power produces the same effects.

During the foregoing changes, the larger vessels of the part, which are too opake to permit the motion of the blood to be seen in them, suffer no change that can be detected by the microscope, except that, after the distension of the capillaries has become very great, the vessels immediately preceding them in the course of circulation begin to partake of the distension. Thus when the fins of the lampern were first exposed to the air, the inflammation assumed the appearance of a slight blush, in which it was difficult, with the naked eye,

* Both in Dr. Hastings's and my own experiments, the means employed were various, but the effects always the same.

to discover any vessels; but, after some time, vessels of a considerable size were seen creeping through the inflamed parts. Before this change is observed in the larger vessels, the capillaries are distended to many times their natural size, and the blood in those most distended, has, generally, ceased to move. This, it is evident, cannot go very far, without the latter vessels wholly losing their vitality, and gangrene ensuing.

The state of the larger vessels of an inflamed part, with the exception just mentioned, is very different from that of the capillaries, and may be ascertained without the aid of the microscope. The increased pulsation of the larger arteries supplying an inflamed part, sufficiently evinces their increased action: nor is there any difficulty in detecting this increased action. I have often, in inflammatory affections of the jaws, applied the finger to the external maxillary artery, both where it passes over the bone, and after it assumes the name of labialis, and, in rheumatic affections of the head, to the temporal arteries, and perceived them beating with unusual force. On this increased action of the larger arteries of an inflamed part, the throbbing and general appearance of activity in the part depends, and on it is founded the popular opinion that inflammation consists in an increased action of all the vessels of the inflamed part, an opinion adopted without a moment's reflection on what must necessarily be the consequence of such an increased

action. We shall, in the conclusion of this paper, see this generally increased action, and its consequences, exhibited by a very simple experiment. The difference between what is called active and passive inflammation, depends on the degree in which the arteries supplying the *vis a tergo* to the debilitated vessels, are excited.

We should, at first view, be inclined to ascribe the increased action of the larger arteries to the impediment opposed to the free transmission of the blood through the debilitated capillaries; but the following facts point out that it depends little, if at all, on this cause. The anastomoses of the vessels are so numerous and free, that, as we shall presently see determined by direct experiment, if the passage of the blood is opposed through one channel, it immediately finds another, without occasioning any apparent change in the state of the vessels concerned. The degree in which the larger vessels are excited is rather proportioned to the nervous irritation occasioned by the state of the distended capillaries, than to the degree and extent of the inflammation, for a slight internal inflammation excites the whole sanguiferous system, while a more severe external one has little of this effect; and in habitual inflammation, when the vessels have yielded slowly, and, consequently, without much nervous irritation, there is comparatively little increased excitement of the larger vessels of the part, and often, even in internal parts, none at

all of the whole system. From these observations it would appear, that it is to the nervous irritation occasioned by the morbid distension of the capillaries, that we are to ascribe the increased action of the larger arteries of the part. We have just seen how much the action of the vessels is under the influence of the nervous system. The final cause of this increased action is evidently to support the circulation in the debilitated vessels, and excite them to a more vigorous action*.

If the inflammation depend on a debilitated state of the capillaries, it follows, that whatever increases the action of these vessels, should relieve the inflammatory symptoms. This may be regarded as an *experimentum crucis* on the subject, for if exciting the capillaries of an inflamed part does not relieve the symptoms, whatever share the debility of these vessels may have in producing the disease, the co-operation of some other cause must be necessary. If, on the contrary, we find that as, on the one hand, whatever debilitates the capillaries, produces inflammation, so, on the other, whatever gives greater activity to them, relieves it, nothing more is required to prove that on their inactivity the disease depends.

I wetted the inflamed web of a frog's foot with distilled spirits, at the same time throwing upon it

* See the Introduction to the above-mentioned Treatise on Symptomatic Fevers, 4th Edit., pp. 24 and 25.

the concentrated rays of the sun, from the reflector of the microscope. The blood in all the vessels, except in those of the most inflamed part, began to move with greater velocity, and, in proportion as this happened, their diameters were diminished, their interstices became less opaque, and the redness of the part was lessened. This experiment was repeated on the lampern, with the same result. By gentle friction, and applying distilled spirits, the motion of the blood in the inflamed part was repeatedly accelerated, and in proportion as this happened the vessels became paler, the deeper red returning as the circulation again became more languid.

Dr. Hastings, in like manner, excited the inflamed capillaries in a frog's foot, by oil of turpentine, and observed the inflammatory symptoms abate in proportion as the capillary vessels lost their increased size, and the motion of the blood was accelerated in them; and in one instance, of which he gives an account in the 90th page, this process was continued till the inflammation subsided. Excessive heat and cold, in Dr. Hastings's experiments, produced languid motion of the blood, and dilatation of the capillary vessels, exactly in the same proportion as the part became inflamed. When the inflammation was caused by cold, he saw it cured by a moderate and continued application of heat, by which the motion of the blood in these vessels was accelerated, and they were made to resume their natural dimensions. When the in-

flammation arose from the excessive application of heat, cold produced the same effects. These facts, while they, in a striking manner, confirm the result of the experiments just related, illustrate positions which I endeavoured to establish in a paper which the editor of the Annals of Philosophy did me the honour to publish in the XIIth volume of that work, that cold, although only the absence of heat, is as positive an agent, with respect to the animal body, as heat itself; and that both cold and heat, the temperature of that body being the mean, like all other agents, act on it, either as a stimulant or sedative, according to the degree in which they are applied, in a certain degree all acting as a stimulant, in a greater degree as a sedative; the difference between what is called a stimulant and sedative consisting, in the former, distilled spirits or heat for example, being more inclined to act as a stimulant, and the latter, tobacco and cold for example, as a sedative: but there is a quantity of tobacco, and a degree of cold, so small as to act as a stimulant, and a quantity of distilled spirits and a degree of heat, so great as to act as a sedative.

It is evident that the blood cannot be long retained in the debilitated capillaries, and thus, as it were, thrown out of the circulation, without some morbid changes taking place in it. Its vitality must soon cease after its motion is wholly suspended, and the changes, to which dead blood is liable, begin to take place in it. Dr. Hastings observed, that when

when the debilitated capillaries were stimulated, the blood which passed from them, often contained irregular flocculi, instead of globules, which he compares to the ragged portions separated from the coagulum of arterial blood*.

For the manner in which the various symptoms of inflammation, and means of cure, support the view of the disease, afforded by these experiments, the reader is referred to the Introduction to the Treatise on Symptomatic Fevers above mentioned.

Nothing can be more simple than the *modus operandi* of the means of cure in inflammation according to that view of it. All the local measures are such as either relieve the vessels from part of the fluid which distends them beyond their natural capacity, or more directly excite them to a more vigorous action. All the general means are such as influence the *vis a tergo*, either reducing it where it is so powerful as still further to distend the debilitated vessels, or increasing it, when it becomes too languid to afford the aid necessary for supporting some motion of the blood in these vessels, and thus preventing gangrene, the effect of its total stoppage.

It appeared to me that it would tend to throw

* Dr. Hastings' Treatise on Inflammation of the Mucus Membrane of the Lungs, p. 97.

additional light on what has been said, to subject to the test of direct experiment the principal opinions which prevailed respecting the nature of inflammation previous to that which referred it to a debility of the capillary vessels*. Four only deserve attention: the opinion which supposes this disease to arise from a morbid lentor of the blood clogging the minute vessels; that which ascribes it to what has been termed *error loci*, the grosser parts of the blood getting into vessels too small to transmit them; that which supposes a spasm of the extreme vessels to be its cause; and, lastly, that which refers it to a morbidly increased action of the vessels of the inflamed part.

The reader will readily perceive that the principle of the three first doctrines is the same. In all, obstruction in some of the minute vessels is regarded as the cause of inflammation. It is surprising, therefore, that none of the supporters of these opinions thought of trying whether or not obstruction is capable of producing it. Admitting that the vessels are obstructed, it does not follow that an accumulation of blood will take place in the part. The blood may pass off by anastomosing branches, or the vessels may resist the distending force.

A hot wire was passed through the web of a

* For the origin of this opinion, see Dr. Hastings's work, and my Treatise on Symptomatic Fevers.

frog's foot, by which the skin about the hole was shrivelled, and the vessels obstructed, no fluid of any kind being discharged. Here an obstruction was produced surely more than equal to what takes place in many inflammations of small extent, and yet no symptom of inflammation ensued, every part of the web remaining as pale as before the experiment *.

In order to ascertain whether inflammation arises from an increased action of the vessels of the part, it is only necessary to induce such an action, and observe its effects. Having brought the web of a frog's foot before the microscope, I now and then, during some minutes, observed the velocity of the blood, which continued, as far as I could judge, the same. The foot was then wetted with distilled spirits, and, in a few seconds, the blood in all the vessels was moved with a greatly increased velocity, which, as the web was constantly kept wet with the distilled spirits, continued as long as I observed it, ten minutes or a quarter of an hour. But during no part of the time could I perceive the slightest symptom of inflammation, either with or without the microscope. The vessels, instead of appearing redder, and more turgid, were evidently paler and smaller than before the application of the distilled spirits. The velocity of the circulation was further increased

* Introduction to a Treatise on Symptomatic Fevers.

by throwing on the web, the concentrated rays of the sun, from the reflector of the microscope, but still with the same effects*.

The result of these experiments has since been confirmed by many made by Dr. Hastings, of which an account is given in a work to which I have several times had occasion to refer.

* Introduction to a Treatise on Symptomatic Fevers.

AN ESSAY

ON

THE PROXIMATE CAUSE

OF THE DISEASE CALLED

PHLEGMASIA DOLENS.

By DAVID D. DAVIS, M.D.

Read May 6, 1823.

THE remarkable affection of the lower extremities incident to women during the period of their confinement in child-bed, which is now pretty generally known in this country under the designation of phlegmasia dolens, has not hitherto been the subject of accurate and sufficient pathological investigation. The facts to be detailed in the present communication are submitted to the society as a small and first contribution, to be followed, I trust, by others from other quarters, towards the developement of the proximate cause of that disease.

Up to the date of Case No. 1, that of Mrs. Caroline Dunn, to be presently related, I find suggested

by authors, and admitted into books of nosology, four different theories upon this subject; all of them, it must be acknowledged, more or less plausibly derived from some of the known and obvious phenomena of the distressing malady.

As I hope to be able, in a great measure, to establish, on the evidence of morbid anatomy, the point of pathology now about to be proposed, I shall content myself with simply stating the substance of these doctrines; and refer gentlemen, who may be desirous of further information upon such matters, to the very able and elaborate essay on Phlegmasia Dolens, by my friend, Dr. Hull, of Manchester.

The first general idea on this subject deserving of notice, is that which was very modestly suggested by Mauriceau, in which he imputes the disease in question to metastasis of the lochia, or, to use his own words, " to a reflux determined to these parts" (the lower extremities) " of humours, which ought to be evacuated by the lochia."—*Mauriceau, Traité des maladies des femmes grosses et de celles qui sont accouchées. 5eme edit. vol. i. p.* 446.

The same doctrine, with some modifications, is adopted by Mesnard, who refers the swellings of the lower extremities of puerperal women to " suppression of their lochia, producing an over fulness

of their blood-vessels, and a consequent arrest and coagulation of lymph in the parts affected."—*Mesnard, Guide des Accoucheurs, Paris*, 1743.

The second theory to account for the same phenomena, consists in a particular application to this subject of the celebrated doctrine of metastasis of milk—*depôts de lait.* This seems to have been first advanced by Puzos towards the middle of the last century, and was published, in the posthumous edition of his works, in 1759, *i. e.* six years after his death. It was adopted by Levret, and made the subject of a communication from that gentleman to the Journal de Medicine of Paris, for the month of July in the same year. Since that period, it has maintained a brilliant reputation in the continental schools of medicine; where, indeed, it has assumed several varieties of forms to suit the plastic fancies of different writers who have received and supported it.

A third theory which has been formed on this subject, and which, like its predecessor, has been presented under several different modifications, is that of obstructions, or other morbid states of the lymphatic organs of the parts affected. With whom, and at what precise date, this notion originated, I am not able positively to state. The authors who first espoused it, in publications professedly on the subject, have been Mr. Charles White,

of Manchester, and Mr. Charles Brandon Trye, of Gloucester; the former in 1784, and the latter in 1792.

Dr. Hull published his Essay on Phlegmasia Dolens in 1800. After criticising at some length, and with the ability which both his friends and his enemies have well known how to appreciate, the doctrinal speculations of his predecessors, he propounded a new theory of his own; which, to do it perfect justice, I shall take the liberty of stating in his own words.

"The proximate cause" (of phlegmasia dolens) "consists in an inflammatory affection, producing suddenly a considerable effusion of serum and coagulating lymph from the exhalants into the cellular membrane of the limb. The seat of the inflammation I believe to be in the muscles, cellular membrane, and inferior surface of the cutis. In some cases, perhaps, the inflammation may be communicated from those parts to the large blood-vessels, nerves, and the lymphatic vessels, and glands imbedded in them."

In the statement of this theory, we have two distinct propositions advanced: viz. 1st, that the disease is an inflammation presumed to have the effect of suddenly producing a considerable effusion of serum and lymph into the cellular membrane:

and 2dly, that the muscles, cellular membrane, and inferior surface of the cutis, are essentially and originally the seat of such inflammation.

It is particularly worthy of remark, that this very capacious theory of a proximate cause of disease, so extensive in its primary operation as to require for its seat and subject-matter such a great variety of structure, is not professed, by its learned author, to be founded upon any evidence derived from examination after death of the parts affected. I am, indeed, fully aware, that no evidence of this kind existed at the date of Dr. Hull's publication; if, however, we except one most important case—a case to which the Doctor himself refers, though he is scarcely willing to consider it as a genuine example of phlegmasia dolens. The observation I allude to was originally published by J. Gottfrey Zinn, in 1753, in the second volume, p. 364, of The Commentaries of the Royal Society of Sciences at Gottingen.

As I see no sufficient reason for rejecting this solitary and long-neglected case; as it is given in a small compass, and with much apparent fidelity; and as it will be found to bear very closely upon what, I trust, will soon appear to be the true pathology of the disease under consideration, I shall take the liberty of quoting it. I shall adopt the version of the editors of the Medical Museum

(vol. i. p. 335), excepting in one or two passages where the meaning of the original is not duly rendered.

"OBSERVATION.

"AN ŒDEMATOUS FOOT, FROM A COMPRESSURE OF THE CRURAL VEIN.

"A woman, nearly thirty years of age, after a difficult labour, and in consequence of careless conduct, suffered much disturbance of her lochia. Her right leg was seized with an œdematous swelling, which extended from the groin to the heel, and enlarged the right labium pudendi. At the same time she was also seized with a loss of appetite.

"Every probable means afforded by the art of healing was tried to remove the swelling, but without success. Neither diaphoretics, nor purgatives, nor diuretics, gave any relief; and fomentations and frictions excited the most violent pain. An incision was made through the cutis of the thigh, that the water might be drained off by an issue; but only a few small drops were discharged by it. The serum, in the cellular membrane, assumed in some sort the nature of a tremulous gelatine; all the more fluid part of it being resorbed. At the end of two months the patient died asthmatic.

"On dissecting the body, we found some of the

inguinal glands schirrous, greatly enlarged, and surrounding the crural vein, by which its diameter was very much diminished."

In an analysis of this dissection, it is important to distinguish between the facts that are reported, and the opinion of the writer as to the order of their relation to each other as cause and effect. The simple facts of the case are enlargement and induration of the inguinal glands, and a great diminution of diameter of the crural vein. That this diminution of diameter in the vein was the effect of the compression presumed to have been made upon it by the enlarged and indurated glands, is to be received as a matter *purely of opinion.* In admitting, therefore, the fact of a diminution of diameter in the vein, we are by no means bound by the author's opinion as to the cause. On the contrary, it is my firm belief, that the actual cause of the asserted diminution of capacity in the vein, was the effect of a primary disease of the vessel itself; and that the inguinal glands had become enlarged and indurated in consequence of their immediate vicinity to the original seat of disease in the crural vein.

It is a matter of obvious inference from the perusal of the above case, though it is not expressly stated, that the interior of the vein was not made the subject of pathological research; otherwise, I am bound to presume that the author would have given us a description of a diseased condition of the

constituent structure, as also of what he calls the "lumen" of the crural vein, which, I take for granted, he would have then and there discovered.

I have now to submit to the Society the results of my own opportunities for ascertaining the morbid changes productive of the phenomena of phlegmasia dolens; together with an important additional contribution from a good pathologist, and a much-esteemed surgeon in the country, Mr. Henry Oldknow, of Nottingham.

In the developement of these facts, it will be my object to prove, or at least to attempt to prove, that the proximate cause of the disease called phlegmasia dolens, is a violent inflammation of one or more of the principal veins within and in the immediate neighbourhood of the pelvis, producing an increased thickness of their coats, the formation of false membranes on their internal surface, a gradual coagulation of their contents, and occasionally a destructive suppuration of their whole texture; in consequence of which, the diameters of the cavities of these important vessels become so greatly diminished, sometimes so totally obstructed as to be rendered mechanically incompetent to carry forward into their corresponding trunks the venous blood brought to them by their inferior contributory branches.

The following cases, accompanied by their se-

veral dissections, are offered in solution of the problem here stated. They are given respectively in the order of their dates.

CASE I.

Caroline Dunn, æt. 21, of a weak constitution, was delivered of a male child on the 7th of February, 1817, after a severe labour of twenty-seven hours' duration. Some loss of blood was sustained both before and after the birth of the child. On account of the latter hæmorrhage the placenta was removed artificially by the introduction of the hand into the uterus.

On the following day the pulse was full and regular at 90. The tongue was white but moist, and there was a slight thirst. Pressure upon the abdomen occasioned no pain: but a soreness was felt in the vagina.

During the days immediately succeeding, the symptoms were moderate. On the 13th the case was reported as follows.—" Slight fever, pulse quick and full, bowels costive, tongue white and dry, labia pudendi inflamed, swelled, and œdematous, some head-ache, respiration difficult, appetite bad, a copious yellow discharge from the vagina, having the consistence of cream, but without fœtor."

17th. The report was, " Better generally :—discharge much decreased, inflammation subsided, bowels well relieved, pulse regular at 86, tongue natural in its appearance, thirst still great.

" 21st. Much better :—sleep good, sat up out of bed for four hours.

" 22nd. Better still :—complained of slight pain, like cramp, as the patient herself expressed it, in the left leg.

" 26th. Worse : left leg and thigh much swollen; pain in the inguinal region, skin hot, no signs externally of inflammation, no pitting on pressure, bowels costive, slight cough, respiration difficult, pulse very quick and small, headache.

" Feb. 28th to March 2nd. No better :—leg pitted on pressure, countenance depressed, languor, giddiness at intervals, pulse 80, freedom from pain, no appetite, bowels twice relieved.

" 3d. Total insensibility :—limb equally swollen, countenance sunk, pale, and emaciated.

" 4th. Died at noon this day."

The above account is an abstract of the leading facts of the case taken from more copious notes

which were furnished to me by the young gentleman, Mr. Francis Hunt, from Bath, at that time my pupil, who had attended the patient.

Not satisfied with any theory of the disease which up to the date of the unfortunate case just related had been promulgated, I sought the earliest opportunity of obtaining the husband's permission to inspect the body: and, feeling anxious that the report of any remarkable appearances which might present themselves should be entitled to the most perfect confidence of the profession, I made application to my friend, Mr. Lawrence, to undertake that duty, which he very kindly acceded to; and at my further request, he obligingly sent me by the next day's post, the following account of the appearances on dissection. "See Plate VI, Fig. I.

"*Appearances observed on examining the Body of Caroline Dunn, on the 6th of March,* 1817.—*Present Dr. Davis.*

"The left lower extremity presented an uniform œdematous enlargement, without any external discoloration from the hip to the foot. This was found, on further examination, to proceed from the ordinary anasarcous effusion into the cellular substance. The inguinal glands were a little enlarged, as they usually are in a dropsical limb; but pale coloured, and free from the slightest sign of inflammation. The femoral vein from the ham up-

wards, the external iliac and the common iliac veins as far as the junction of the latter, with the corresponding trunk of the right side, were distended and firmly plugged with what appeared externally a coagulum of blood. The femoral portion of the vein, slightly thickened in its coats, and of a deep red colour, was filled with a firm bloody coagulum closely adhering to the sides of the tube, so that it could not be drawn out. As the red colour of the vein might have been caused by the red clot every where in close contact with it, it cannot be deemed a proof of inflammation. The trunk of the profunda was distended in the same way as that of the femoral vein; but the saphena and its branches were empty and healthy. The substance filling the external iliac and common iliac portions of the vein was like the laminated coagulum of an aneurismal sac, at least with a very slight mixture of red particles. The tube was completely obstructed by this matter, more intimately connected to its surface than in the femoral vein; adhering, indeed, as firmly as the coagulum does to any part of an old aneurismal sac. But in its centre there was a cavity containing about a tea-spoonful of a thick fluid of the consistence of pus of a light brownish red tint, and pultaceous appearance.

The uterus which had contracted to the usual degree at such a distance of time from delivery, its appendages and blood-vessels and the vagina

were in a perfectly natural state. There was not the least appearance of vascular congestion about the organ, nor the slightest distension of any of its vessels. Its whole substance was on the contrary pale, and the vessels every where contracted and empty.

"The state of the abdominal cavity and its contents was perfectly natural.

"That the substance occupying the upper part of the venous trunk, and the fluid in its central cavity had been deposited there during life from inflammation of the vessel does not admit of doubt. I am also decidedly of opinion, in consequence of its firmness and close adhesion to the vein, that the red coagulum in the femoral vein was the result of a similar affection extending along the tube; and that the passage of blood through it in the whole tract submitted to examination, must have been completely obstructed before death.

"WM. LAWRENCE."

"College of Physicians."

The above case, after exciting considerable interest among my pupils and their immediate friends at the time of its occurrence, was made the subject of a public debate or conversation at the Bartholomew Society in the spring of the same year. I state this fact on the authority of Mr. Hunt and other students of that period; and I have no doubt

that it is a matter of perfectly distinct recollection with some gentlemen who are still in the habit of paying occasional visits to that justly celebrated hospital. Since that time, I have myself constantly made it the subject of discusion in my lectures as well as of conversation with my professional friends.

CASE II.

Mrs. C. a lady of a sanguineous irritable temperament, died suddenly in the midst of apparently high and perfect health, on the 20th of September, 1819, in her sixth week after her second puerperal confinement. On the day after her delivery, she was seized with violent peritoneal inflammation, which, however, yielded, after a pretty smart conflict, to free and repeated bleedings, together with the application of between forty and fifty leeches to the abdomen. The febrile excitement was nevertheless not completely subdued by these measures; and in about ten days afterwards, I was apprized by my friend Mr. Anderson, of Fleet-street, to whom I was indebted for much substantial assistance in the management of this case, that our patient had made complaint of a deep-seated pain in the groin and along the tract of the great vessels of the thigh. On first inspecting the limb, I found it considerably swelled and exquisitely painful. By the prompt application of leeches to the groin and

interior of the thigh, and afterwards by blistering extensively the same surfaces, this new inflammation was speedily reduced, and, in about a week from its commencement, the swelling had entirely subsided, and the patient had recovered the full power of contracting and extending the extremity without suffering pain. From this period she convalesced rapidly and satisfactorily. Her death took place *instantaneously*, whilst in the act of changing the recumbent for a sitting position, in the expression of a little merriment at the expense of something ludicrous which her waiting woman had said to her, and in about an hour after the enjoyment of an unusually full dinner.

Dissection.—"In the examination of the late Mrs. C. in the presence of Dr. Davis, Mr. George Anderson, and John C. Taunton, the following circumstances were noticed:—

"The external appearance of the body was healthy and natural, no apparent loss of flesh nor strength having been sustained.

"The external surface of the thoracic viscera was natural, the lungs were healthy, the pericardium and large blood-vessels were all perfectly natural.

"In the abdomen, adhesions between the viscera and the parietes were observed, chiefly at the upper part of the cavity. These were the consequence

of previous inflammation, which had completely subsided, and neither it nor its results could have had any agency in producing the death. The blood vessels in the upper part of the small intestines were a little surcharged with blood. The stomach, with its contents, was natural. The gall-bladder contained a small quantity of bile. The bile-ducts were free. The liver, spleen, pancreas, and kidneys, were all healthy. The vessels, both arteries and veins, were quite free from disease. The uterus and its appendages, together with all the pelvic viscera, were natural and healthy.

"JOHN TAUNTON, Surgeon.

"September 21, 1819."

I have to regret that Mr. Taunton, after examining the uterus and its appendages, with which he concludes the above description, was obliged to leave us somewhat hastily, on account of another urgent claim on his time. Mr. George Anderson and Mr. John C. Taunton were, however, kind enough, at my request, to undertake the examination of the iliac veins. It is to them that I am indebted for the preparation, No. 2. It forms a part of the left external iliac vein, including about half an inch of the upper portion of its corresponding femoral vein. That vessel was found strongly attached by adhesions of its cellular coat to the parts forming its natural bed. Its parietes still retained a morbid thickness, and its internal tunic was studded in several places with deposits of ad-

herent lymph. The portion most remarkable for this incrustation, and otherwise most diseased, was the part of the vein immediately under Poupart's ligament. The appearance of that part is yet well preserved in the preparation, and forms the rough scabrous inferior portion of it. The tube of the vessel was still manifestly pervious, though it had suffered a diminution of capacity, amounting to, perhaps, one-half of its natural diameter. The inguinal glands were not diseased. The right iliac vein was in a perfectly healthy state. Plate VI. Fig. 2.

For the next case, I am indebted to the kindness and liberality of Mr. Oldknow, of Nottingham.

CASE III.

" Jane Elliott was delivered in September, 1820, having an easy and natural labour. Until the 20th day after the delivery she was doing well; on that day she was seized with a violent purging*, for which astringents were given with success; but the pulse continued quick, and she had considerable fever. On the 30th day, the purging returned, and the left lower extremity became swollen and painful, with considerable increase of fever. She died on the 34th day.

* Diarrhœa was prevalent at the time.

DISSECTION.—"On examining the swollen limb the day after her death, I found the femoral vein, one-third down the thigh and all the iliac veins, much enlarged, and containing adherent layers of coagulated blood, similar to that found in aneurismal sacs, together with a sort of grumous fluid of a brown colour, more or less mixed with air, and almost obliterating the venous canals. The same appearances, but in a much less degree, extended along the cava as far as the entrance of the renal veins. The coats of the veins were highly inflamed, and intimately attached to the surrounding parts. The absorbent vessels and glands were slightly enlarged as high as the lumbar regions, but not otherwise affected. The uterus had regained nearly its natural size."

In connexion with the preparation, No. 3, which accompanies the above important dissection, I feel it a duty to give insertion to a part of a letter which I had the honour of receiving from Mr. Oldknow, at the same time with the specimen itself.

"MY DEAR SIR,

"I SEND you the preparation; but I regret that it so imperfect. For owing to having allowed it to macerate in water too long, the extent of the deposition is not seen; it having separated from the internal surface of the vein in flakes of various sizes. The principal one remaining (and which is seen in the preparation, though in a very imperfect

state) is the inguinal and contiguous portion of the external iliac veins. But the description which you possess, the accuracy of which I vouch for, must supply the deficiency. The small pieces of bougie are placed in the internal iliac artery where it passes over the vein.

"I remain, my dear sir,

"Yours, truly,

"H. OLDKNOW."

See Plate VII.

CASE IV.

Mrs. L..... a lady of a delicate constitution, and of a very irritable habit, was delivered of her fifth child on the 2nd day of July, 1821. She had been subject to feverish affections in several of her former confinements. On this occasion she was doing well until the seventh day after her delivery, when she was taken out of bed and placed upon a sofa, between the fire and a large loosely hung window. In this situation she was seized with a violent rigor. During the gradual developement of the succeeding hot fit, she experienced a pain of the left side of the chest, which increased rapidly in intensity. She was freely bled before I saw her, without experiencing adequate relief. She was afterwards bled, leeched, and blistered. The pain of the chest was then in a great measure subdued;

but this flattering advantage was not accompanied by any material reduction of the attendant fever. The pulse on the contrary continued quick, and the general distress and restlessness were so little mitigated as to call for much sympathy, and to excite serious alarm. In the evening of the same day, unequivocal symptoms of phlegmasia dolens declared themselves. The patient died on the 23d of the month.

Dissection.—Present, Dr. Sims and Mr. Macdonald, who had assisted me in the treatment of the case; and Dr. Courthope Sims.

The pleura costalis of the left thoracic cavity was found slightly inflamed, and lined in two or three places with a delicate tunic of lymph. There was also an effusion of about six ounces of a nearly transparent serosity into the cavity itself. The lung of the same side was of a dark red hue. The heart and pericardium presented no appearance of disease. The right cavity of the chest and its contents were also healthy.

All the surfaces and viscera of the abdomen were apparently in a perfectly sound state. The left lower extremity, from the hip to the toe, was considerably but not greatly enlarged, and there was an evident fulness of the labium pudendi of the same side. The iliac veins of both sides were unusually turgid with blood; but presenting no other

external manifestation of disease. They were entirely free from attachments to the contiguous parts. The inguinal glands were certainly not diseased, nor even visibly enlarged. On making a careful incision into the left external iliac, it was found to contain a coagulum of blood of firm consistence; but not at that part adherent to the internal surface of the vein. Upon examining, however, the common iliac portion of the vessel, adhesion of the same column of coagulum had obviously taken place; an appearance which is now distinctly to be seen in the preparation. (See preparation No. 4). The left *internal* iliac was greatly inflamed, and its diameter was so much contracted by the morbid thickening of its parietes, that it was rendered almost impervious. The right iliac vein, including both its common and external portions, was distended with a similar coagulum; or rather the same column of coagulum was prolonged over the angle of their common junction with the vena cava from one iliac to the other. In this interesting fact of the dissection we cannot fail to recognize, had the poor patient's life been preserved, the materials in actual preparation for a similar affection of the right limb. Plate VIII.

As a sequel to the above cases I may be permitted to add a short abstract, just published, in the Medical Repository for the present month, of two pathological histories, one on the same, and

the other on an analogous subject, given in the Journal de Physiologie of Paris for last January. It will be seen that the phenomena of the last case, which was the only case of true puerperal phlegmasia dolens, were attributed to a circumstance probably purely adventitious.

" M. Bouillaud has observed in several cases of infiltration of the lower extremities, the venous trunks entering the pelvis quite impermeable and filled with a concrete and organized coagulum.

" In the case of a female, who died from chronic peritonitis and schirrus of both ovaria, with immense infiltration of both the lower limbs, the veins near their opening into the cava were in a manner obliterated by the pressure of the diseased ovaria, and completely filled from their junction with the cava with a carnified friable coagulum.

" In another female, aged 38, who soon after her confinement had great œdema of the lower extremity, and who soon afterwards died, on dissection, the veins of that limb were found to be filled with a similar coagulum to that of the former case, which extended to the vena cava. The other veins were in their usual state. The iliac portion of the colon was distended with a large mass of indurated fæces, which pressed on the adjoining veins, and gave rise to their impervious state and to the infil-

tration of the limb. These observations were made in a Parisian hospital." Jan. 1823. Journal de Physiologie.

I shall conclude with a few general observations in application of the above facts to the known phenomena of the disease.

The primary seat of pain, on the accession of phlegmasia dolens, is the precise locality of the inflammation and other diseased affections of the veins of the pelvis, as observed upon dissection in the above cases. See Levret. L'Art des Accouchemens. Des Infiltrations laiteuses, troisième édition, p. 176.

" The first complaint," says Mr. Trye, " made by the patient, in every case which I have been acquainted with, was that of stiffness or soreness, in one of the lateral regions of the lower belly, and pain in moving or turning about the body." " Upon examination, a fulness and hardness in the affected iliac region may be perceived, and for the most part a circumscribed tumour. A weakness of the thigh and leg of the same side, and in most cases an œdematous swelling of them came on, but not always. The affection of the extremity has not been complained of for two or three days after the coming on of the pain in the flank." Trye's Essay, p. 6.

Mr. White, in his general description of this disease, observes that, " in about twelve or fifteen days after delivery, the patient is seized with great pain in the groin of one side."....." This part soon becomes affected with swelling and tension, which extend to the labium pudendi of the same side only, and down the inside of the thigh, to the ham, the leg, the foot, and the whole limb."..... " The pain in the groin is generally preceded by a pain in the small of the back, and sometimes by a pain in the bottom of the belly on the same side." White's Enquiry, p. 7.

Dr. Hull states, " that the complaint generally takes place on one side only at first, and the part where it commences is various; but it most commonly begins in the lumbar, hypogastric, or inguinal region on one side, or in the hip, or top of the thigh and corresponding labium pudendi." In a note, it is remarked by the same author, that " when it begins in the lumbar region, it appears to be *propagated along the psoadic and iliac muscles to the groin*, and resembles a severe case of lumbago. When it affects the hip first, it appears under the form of a violent ischias or sciatica." Hull's Essay on Phlegmasia Dolens, p. 134.

I have myself met with some cases, where the pain first and most complained of has been in the calf of the leg, or some other inferior part of the affected extremity; but in all such cases I have also found, that, upon application of the gentlest pressure to

the corresponding groin and iliac region, the patient has instantly flinched from the touch.

The swelling which succeeds to and accompanies the pain in phlegmasia dolens is first perceived in the groin and adjacent parts, and observes a regularly progressive course downwards from the pelvis to the toes. This fact is mentioned by almost all the writers on the disease, as an essential part of its history; and by several of the nosologists, as a pathognomonic symptom of it.

The principal veins of the pelvis are necessarily exposed to great pressure from the uterus during the latter months of gestation. A well-known effect of this pressure is a varicose dilatation of the superficial veins, together with œdema of the lower extremities;—a state of the limbs indicative, in the opinion of practical writers, of a predisposition to phlegmasia dolens. Practitioners in midwifery are often consulted at those periods, on account of distressing pains and pinchings, which are referred to the small of the back, iliac regions, and groins, and which no doubt are occasioned by pressure of the distended uterus upon the parts lining and corresponding with the brim of the pelvis.

A striking evidence of organic injury sustained by the great veins within the pelvis, from pressure and distension during gestation, is recorded in the first volume of the London Me tory, p. 456, in a paper entitled, 'C

internal iliac Vein during Pregnancy.' The subject of the case was in the ninth month of her sixth pregnancy. Her former children had been unusually large, one of them having weighed eleven pounds. In several of her former pregnancies she had complained of pain in the right iliac region, which had been greatly relieved by bleeding. But on account of her absence from town till within a few weeks of her expected delivery, the same precautionary measure was unfortunately not adopted on this occasion. On the night of her death, she was suddenly awoke by a violent and deep-seated pain in the right groin and extending towards the hips. "An extraordinary sensation of coldness ensued, accompanied with a sense of fulness and distension of the abdomen, and pressure on the thorax, occasioning very laborious breathing." Then follows an enumeration of the moribund symptoms, such as usually supervene upon the rupture of great vessels situated within the trunk of the body. "The body was opened by Sir William Blizard. Upon dividing the integuments, the whole of the abdomen not occupied by the gravid uterus was filled with coagulum. The uterus was in its natural situation, but was of immense bulk and weight from a fœtus of an unusual size. The hæmorrhage did not proceed from any of the vessels of the uterus; but a rupture of the internal iliac vein was discovered, through which the refluent blood had passed into the cavity of the abdomen."

It is easy to conceive, that diseased affections of

contiguous parts may operate as causes of irritation upon the great veins of the pelvis, and, by quickly injuring their natural and healthy organization, become productive of phenomena similar to those of phlegmasia dolens. M. Bouillaud's first case is to be attributed probably to an influence of this kind. A well detailed example, illustrative of the same important fact is recorded in the Journal der Practischen Heilkunde, of Hufeland, for June, 1820. An instance of the same fact is recorded by Morgagni, letter 56, art. 10. A mild case of phlegmasia dolens succeeded to rupture of the uterus in a patient of Mr. Hugo's, of Crediton, who recovered after that tremendous accident was published by that gentleman in the London Medical and Physical Journal, vol. xix. p. 212.

Since writing the above, my friend, Dr. Birkbeck, has kindly sent me some particulars of a case of swelled lower extremity in a lady who had not been parturient for many years, occasioned, as it was supposed, by a diseased state of some of the organs within the pelvis, in which he could distinctly trace the femoral vein in its usual course along the superior and interior part of the thigh into the groin, greatly enlarged and indurated. "The regular form of it was interrupted by indentations at intervals, appearing to coincide with the position of the valves."

But it appears probable that such diseased affec-

tions of contiguous parts, in order to become productive of the peculiar swelling and other symptoms of phlegmasia dolens, must be propagated to the veins concerned somewhat suddenly, after the manner of acute diseases, and also extensively, so as to impede their circulation almost perfectly and at once; as otherwise we might presume that the process of opening or widening new channels by the accommodating operations of the principle of anastomosis, would keep pace with the obstructions and obliterations of the old ones. Hence we have some examples recorded of obliteration of the iliac veins, from causes very slowly and gradually applied, where no symptoms indicative of obstruction in the venous circulation had presented themselves during the life of the patient. See Hodgson's Treatise on the Diseases of Arteries and Veins, p. 530.

It does not seem necessary to extend this mode of explanation to account for the absence of some of the peculiar symptoms of the swelled leg in the case of obliterated vena cava, and iliac veins, published some years ago, by the late Mr. Wilson, in the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, vol. iii., p. 70; inasmuch as the original locality of the disease in that case, which probably was the inferior portion of the vena cava, is not presumed, in the present communication, to be the proximate seat of the obstruction to the venous circulation in phlegmasia

dolens. On the other hand, we have no evidence that the patient had not been the subject of phlegmasia dolens during the first weeks of her confinement; though, upon the whole, it seems more probable that the intumescence, which might be expected to have presented itself, as the result of the obstruction to the circulation in her particular case, had only affected the parts in the immediate neighbourhood of the pelvis.

It is at present perfectly well known that diseases of veins are often attended by very formidable symptoms, and that occasionally they prove fatal in their events. Of the correctness of this statement abundance of evidence is furnished by Mr. Travers in his valuable Essay lately published "on Wounds and Ligatures of Veins." See also a good paper containing some new facts in review of Mr. Travers's Essay, signed "BRESCHET," which has recently appeared in the second volume of the Journal Complimentaire du Dictionnaire des Sciences Medicales. Many similar testimonies are likewise to be found in the pathological works of Hunter, Abernethy, Wilson, and Hodgson.

Phlegmasia dolens is a disease which almost always occurs in an excited state of the organs of the circulation; and when that is not the case, it is known to take place during a period of predisponency to inflammatory action of the great blood-vessels within the pelvis, and their immediate rami-

fications. Hence its occurrence after labours and miscarriages, before the perfect re-establishment of the balance of the circulation; and at those times, more particularly, after profuse hæmorrhages, or during phlegmasiæ of other parts; or from the application of occasional causes of whatever kind which may have the effect of exciting a febrile disturbance in the system.

All the veins liable to much pressure, or to enlargement of diameter during pregnancy, appear to be more or less predisposed to inflammation upon the sudden removal of those agencies, by the consummation of the act of parturition. Hence the predisposition, especially to hysteritis and peritonitis during the first week after labour, and to the swelled leg, and to mammary abscesses at a more advanced period. See Wilson's Lectures on the Blood, &c., published in 1819. Lect. 15, pp. 414, 415.

It is a part of the history of phlegmasia dolens, that it is seldom known to attack the same extremity more than once. The explanation of this curious fact will possibly be found in the probability, much to be presumed upon, that the entire system of great veins within the pelvis is, in such cases, totally obstructed by the disease, converted into ligamentous structure, and therefore rendered unsusceptible of a similar disease in future. But I am positive on the evidence of several cases, which

I have myself seen or examined, as well as on that of published authorities of unquestionable authenticity, that there are occasional exceptions to the rule. See Medico-Chirurgical Journal, vol. ii. p. 497.

Such exceptions, which, after all, are extremely rare, are probably to be attributed to the disease in the first instance proving incompetent to consummate perfectly its destructive work, so as to render the veins affected by it totally impervious; or, perhaps, still more probably, to some of the veins within the pelvis escaping the first attack of the disease altogether, as in the case of Caroline Dunn, in the description of which Mr. Lawrence states, that the internal iliac vein, and vena saphena were found entirely free from disease.

If the proximate cause of phlegmasia dolens, presumed in this paper, be indeed the true one, it should follow as an inevitable consequence, that after an extremity shall have been once thoroughly affected by the disease, the business of the circulation would have to be carried on in future by the establishment of an extensive system of anastomosis. Accordingly, I take upon myself to assert, that, in a very large proportion of cases, which by the favour of many friends I have had opportunities of examining, where the inferior extremities had been so affected, I have had the satisfaction of observing that important confirmatory

result. The superficial veins, sometimes the very finest cutaneous veins, are to be seen, in many such cases, much enlarged, and, clustering together into extensive varices, increasing proportionally in dimension as they ascend high on the limb, to ramify in still bolder paintings on the hips and abdominal regions.

But I must acknowledge that these appearances, though to be easily recognized in a great majority of cases, have not invariably presented themselves. The more particular explanation of that fact I must leave to practical anatomists, and to future opportunities of observation. I would remark generally, that it must depend on peculiar varieties in the distribution of the new circulation. See the interesting dissections of Dr. Baillie and Mr. Wilson, in cases of obliteration of the vena cava, and other great veins within the trunk of the body. Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, vol. i. p. 127. plate 5.; and vol. iii. p. 65—70. and 80.

The tedious process for the establishment of a new and circuitous circulation, is an evil of great and almost incalculable magnitude. It is painful throughout its whole duration, and for the first fortnight it is generally attended with extreme suffering. The time which it requires for its full accomplishment, may be said to vary from five

weeks to about five months; and when the latter period is occupied, the patient seldom or never afterwards recovers a perfectly good state of health.

From a due consideration of these facts, it follows, that our main indication of treatment should have for its object the speedy subduction of the inflammation in the iliac veins; so as to guard against the more immediately dangerous terminations of inflammation in great veins, to prevent obliteration of their cavities, and even, if possible, any material reduction of their diameters; and thus to supersede the necessity for instituting the anastomosing process for the establishment of a circuitous circulation.

The proximate cause of phlegmasia dolens having been proved to consist in a violent and destructive inflammation of the iliac veins and their contributory branches, including in some cases the inferior portion of the vena cava; whilst at the same time the disorder itself is known to be ushered in and accompanied by unequivocal symptoms of pyrexia; it might very naturally occur that general bleeding would best and most speedily and certainly answer the indication proposed. In every case, however, where I have been a party to the adoption of such practice, or where I have had the opportunity of observing the effects of it in the practice of others, I feel it my duty to state, that it has completely disappointed expectation.

I select the following example from among several other cases in my possession, similarly treated, to represent my uniform experience of the inefficiency, to say the least of it, and it is all I wish at present to insist upon, of general bleeding in this disease. The subject of the history was a patient of one of our lying-in hospitals, and the gentleman whose name is subscribed to it, and who kindly drew it up at my request, was one of my best informed pupils at the period of its date.

"An unmarried woman, aged thirty, was, on the 5th of October, 1818, delivered of her first child, after an easy natural labour. On the third day after her delivery, a cathartic medicine was exhibited, which operated satisfactorily. The following evening (fourth day), she complained of severe pain in each groin, attended by headache and general irritation. The skin was now hot and dry, the tongue moist and whitish. The pulse 110, and rather full. The mammæ turgid with milk: the lochia regular. The headache had come on in the morning, accompanied by a pain in the right knee. In the afternoon, some slight shivering had supervened, to which, in a short time, the heat and inguinal pains had succeeded. These pains were circumscribed, and seated in the line of the iliac vessels, about two inches above Poupart's ligament. They were constant, acute, and much increased on pressure, but the integuments covering the parts were in no degree tender, nor was

there any tumour or hardness to be felt. At times the pain extended down the thigh, shooting with severity into the calf of the leg, and sometimes stretching even to the toes. There was now no marked affection of either knee, but the pain on the right side was much more acute than that felt on the other. Twenty ounces of blood were immediately drawn from the arm, and an enema and brisk cathartic administered without delay. 5th day.—During the night, the cathartic operated well, and the morning found the patient cool, and her fever much reduced. But as the inguinal pains were still severe, ten ounces more of blood were taken from the arm, and small doses of sulphate of magnesia were exhibited at intervals during the day. 6th day.—The disease, though much reduced by these evacuations, was not, however, as yet subdued. Cupping-glasses, &c. were therefore applied, first to the lower belly, and then to the loins; but though repeated attempts were made, and by different hands not unaccustomed to this duty, no blood could be thus obtained, nor could any satisfactory reason be assigned for this circumstance. Eighteen leeches were therefore substituted, which acted well. A blister was then applied to the right groin, and the saline laxatives continued as before. On the following day (the 7th) there was little complaint, but of debility; nor did any untoward circumstance, after this, retard the progress of the patient's recovery.

F. A. MACANN, M.D."

"Nov. 12, 1818."

It is worthy of remark, that the subject of the above case was an unmarried woman who had had an easy labour, who had sustained no hæmorrhage, nor been exposed to any other causes of exhaustion. It is therefore to be presumed, that she could bear, with perfect impunity, the general bleedings which were had recourse to. But, at the same time, we may observe, that the disease was by no means subdued by them. On the contrary, we are distinctly informed, that the severe pain in the right iliac region was not removed until after the application of the leeches and the blister. I am not, indeed, acquainted with a single case among a great number which have been recorded since the time of Puzos, where the disease has been cut short at its commencement; or where, in other words, the establishment of the circuitous circulation has been prevented by general bleeding alone. I must however own, that the practice in question has not been without some very sincere and eager advocates. I beg to submit the following testimony in its favour to the deliberate estimate of the Society. "Although I am convinced," observes the celebrated Puzos, "of the necessity of bleedings in these sudden depôts, which are attended by fever, and which may be regarded as forming the commencement of an acute and inflammatory malady; nevertheless, I do not pretend that this method of cure which I propose is infallible. I have had the misfortune of losing more than one patient, in spite of all the bleedings that I could practise: not that the bleed-

ings had been contra-indicated, but that they had been insufficient for such cases———" *Puzos. Mémoire sur les dépôts laiteux*, p. 355.

Phlegmasia dolens frequently occurs in exhausted states of the constitution, from hæmorrhages and long protracted fevers; where general bleeding could not be had recourse to without incurring extreme hazard. Add to this the important fact, that it is in the nature of the disease itself to rob the general system of a large proportion of its blood by locking it up in the affected extremity, so as to make it so far unavailable for the ordinary purposes of the circulation. Hence the palpitations, distressing faintings, and other symptoms of extreme debility, which usually supervene during the intumescence of the limb; an assemblage of symptoms, which, it is to be presumed, we have now good reason to attribute to the struggles of the heart, in its state of sudden privation, to carry on the business of life, and to restore the lost balance of the circulation.

Seeing, then, that general bleeding is so decidedly objectionable, both in theory and practice; I am happy to have it in my power to assure the Society, that the great indication of treatment in this disease as already proposed; viz. the speedy resolution of the inflammation in the iliac veins, is to be secured in almost every case (I have not seen an exception) by early and decisive local treat-

ment. The blood to be abstracted should, accordingly, be all taken from the immediate neighbourhood of the part primarily affected. From the excessive tenderness of the parts concerned, leeches are the only operators to be depended upon in these cases. Of these a dozen or a dozen and a half should be forthwith applied to the groin, to the affected iliac region, and to the interior and superior part of the thigh. If this be done before any very obvious accumulation of blood in the limb shall have taken place, it will generally put down the threatened mischief at once. In the event of our first success proving incomplete, a large blister should be applied to the groin and parts adjacent, both above and below. These measures are to be varied and repeated according to the particular circumstances of the case. See *Trye's Essay*, p. 12, &c.

During the progress of the swelling, which is invariably accompanied by the evolution of much heat, the limb should be cooled, and afterwards kept at a low temperature by evaporating lotions and free and constant exposure to the action of the atmosphere. I attach much importance to this practice.

Some practitioners have placed great reliance upon the action of fomentations in phlegmasia dolens: and I can, indeed, suppose, that in very mild forms of it, they may be of some service. I do not

however remember, that I have ever myself recommended them until after the previous application of leeches; and then chiefly for the purpose of promoting a free discharge of blood from the part. I have known more than one instance of this disease being threatened, and presenting very distinctly some of its peculiar symptoms, and afterwards subsiding almost entirely of its own accord. It is only in such cases that I should be disposed to place exclusive dependence upon the action of fomentations. For a very strong testimony, however, in favour of fomentations, see the fifth volume of the *London Medical Journal*, p. 95.

An esteemed friend has lately suggested to me, that the peculiar swelling incident to this malady might possibly be moderated by gentle bandaging. The hint is particularly worthy of consideration, as it appears to be in perfect accordance with the best known laws of the circulation.

I am not aware that I have ever derived any substantial advantage from the exhibition of antimonials. When it has been my object to reduce arterial action, and when I have felt any doubt as to the permanent efficacy of the measures already recommended, or met with cases of more than ordinary obstinacy, I have of late years had recourse to the use of digitalis in full and frequent doses; viz. in doses of two grains of the powder (Battley's preparation) every two, or, at furthest, every

three hours. My experience of this mode of exhibiting the digitalis in acute diseases, enables me to state, with confidence, that it may be safely administered to adults at such intervals and in such quantities, until the patient shall have taken from twenty-five to thirty grains of it. It should then be proceeded with more slowly, until some one or more of its peculiar effects on the nervous system, or the circulation, be produced, when it should be immediately suspended; to be again resumed or not, according to circumstances. It will generally be an advantage to keep the circulation under its controul for several weeks, as an insurance against the accession of the disease in the other extremity. I need not observe that the foxglove is a potent drug, and that it requires much caution and constant watching in its exhibition. I generally combine it with a small quantity of the blue pill; which I think prevents it, in a great measure, from nauseating the stomach. I do not approve of the use of active purgatives in this disease. The bowels, of course, should be kept moderately open, as indeed should all other important functions of the system be placed under due and well-balanced regulation.

29, *George Street, Hanover Square,*
May 6th, 1823.

Explanation of the Plates illustrating the preceding Paper.

PLATE VI. Fig. 1.

CAROLINE DUNN'S CASE.

a. Shews the superior part of the common and external iliac vein extremely diseased, and charged with a brownish purulent looking fluid obstructing its cavity.

b. The cavity of the accompanying artery having no appearance of disease.

c. The firm coagulum filling up the entire cavity of the femoral vein.

d. The same coagulum produced into contributory branches.

Fig. 2.

CASE OF MRS. C.

f. Deposits and incrustations of blood in a coagulated state. The inferior part of the interior surface of the diseased vessel very rough and scabrous from this cause.

g. Valves.

PLATE VII.

CASE OF MR. OLDKNOW'S PATIENT.

a. Adherent masses of coagulated blood nearly co-extensive with the internal surface of the whole portion of the left iliac and femoral

vein. The same appearance in a less degree extending along the vena cava as far as the entrance of the renal veins.

b. The internal iliac artery passing over the vein to distribute itself upon the organs within the pelvis. No coagulum nor false membrane is to be seen attached to the internal surface of this artery.

c. A part of the vein without attachment of coagulum, and shewing valvular structure.

PLATE VIII.

CASE OF MRS. L.

a. Plug of coagulum in morbid adherence to the internal surface of the common iliac vein.

b. The left internal iliac vein turned on one side to shew the diseased structure of its internal surface.

ON

THE EFFECTS

OF

STRICTURE OF THE URETHRA,

PARTICULARLY OF THE

SACCULATED STATE OF THE BLADDER,

WITH AN

INQUIRY INTO A MODE OF TREATMENT TO AVERT THIS LATTER CONSEQUENCE OF STRICTURE, WHICH IS OFTEN FATAL.

By JOHN SHAW, Esq.

Read Feb. 25, 1823.

THE opinion prevails more generally now than at any former period, that the improvements made in surgery have resulted from the methods of investigating the nature of diseases, by comparison of the healthy organs with the same parts in a morbid state. This induces me to hope, that the proposal to examine in this way a disease more common, and therefore more interesting, than many which have engaged the attention of the profession, will be favourably received by the Society.

The disease to which I allude is Stricture of the Urethra; a disease which may be considered particularly interesting, not only because it is very

common, but at the same time the most difficult to treat successfully, while, if the condition of the parts be not thoroughly understood, it often proves fatal. Our interest in it is also increased by the knowledge, that if we pursue a plan of treatment founded on correct notions of the anatomy and pathology of the urinary organs, we may not only rescue many patients from the most severe sufferings, but also offer well-grounded hopes of a permanent cure. By a correct and safe practice, founded on a knowledge of anatomy, the surgeon has it in his power to confer greater and more lasting benefit, than can be promised after the most brilliant and successful operations on a greater scale.

I shall not at present describe all the effects produced by stricture, but confine my observations to four distinct pathological facts; each of which, however, I trust, will be considered worthy of the attention of the Society.

1st. I have not, in more than a hundred dissections which I have made of diseases of the urethra, seen a stricture or narrowing of the canal, posterior to the ligament of the bulb; nor have I been able to find one example of stricture beyond this part among those preserved in the College Museum.

2d. In almost every instance where a narrow stricture has existed for some time, in any part of

the urethra anterior to the ligament of the bulb, I have found the membranous and prostatic portions dilated to three or four times their natural size.

3d. The ducts of the prostate, which are naturally very small, are always more or less enlarged when there has been a stricture, or a long continued irritation of the canal.

4th. When such a stricture as causes occasional retention of urine has existed for some years, the bladder is found to be not only thickened but often at the same time sacculated.

I shall now endeavour to show the importance of collecting facts which shall either substantiate or invalidate the accuracy of these observations.

In doing this, my principal object will be to bring before the Society certain facts regarding the sacculated state of the bladder, which have not, as far as I can learn, been hitherto noticed; but previous to doing this, I may perhaps be permitted to offer some remarks upon certain practical questions connected with the observations just made, and which, though of daily occurrence, do not seem to have met with that attention which their importance merits.

If the first three observations are correct, certain important practical rules may be deduced

from them. First, if in examining a patient who has symptoms of stricture, the instrument is obstructed at a point posterior to the ligament of the bulb, we ought not to attribute the impediment to a narrowing or stricture of the passage, but to some other cause; to one which will not be removed by such means as are available in the case of stricture. If the second observation, that the membranous and prostatic parts become enlarged in consequence of stricture, be correct, it will be admitted as a consequence, that if a bougie be obstructed posterior to the bulb, in a patient who has previously had stricture in the anterior part of the urethra, there will be still less probability of the obstruction to the passage of the instrument through these parts being caused by a narrowing or stricture of the canal.

The rule obviously deduced from these facts is, that, on feeling an obstruction posterior to the ligament of the bulb, we should not persevere in the attempt to push the instrument further in.

To this rule we shall perhaps be inclined to assent, when we consider that such an obstruction, though an impediment to the entry of the instrument, will probably be none to the passage of the urine from the bladder; and, moreover, that it is questionable whether carrying an instrument along the dilated part is always beneficial to the patient.

The importance of recollecting these facts will be still more obvious, if the truth of the third observation be admitted; since, in consequence of the enlargement of the ducts, it is highly probable, that if the instrument has not been obstructed by certain natural impediments, it has passed into one of the dilated ducts. If this should happen, and if the attempt to push the instrument into the bladder be persevered in, a false passage will probably be formed. The enlargement of the ducts, and the consequent difficulty of passing an instrument through the membranous and prostatic portions in cases where there has been a stricture in the anterior part of the canal, is well illustrated by the preparations on the table, and particularly by No. 50 a. in which a complete labyrinth is formed by the enlarged ducts and by membranous bands, both of which are evidently the consequence of the narrow stricture behind the glans.

If the catheter enters into one of the enlarged ducts, it may be pushed through the prostate into the back part of the dilated bladder: indeed several preparations, illustrative of this accident, have been preserved in the Windmill Street Museum, and are now upon the table of the Society.

The importance of exhibiting these examples to the Society is proved by the fact, that even at the present day the authority of Desault is given for using forcible means to overcome obstructions,

which he describes as the consequence of the narrowing of the prostatic part of the urethra.

As the proofs afforded by the preparations on the table will be, perhaps, considered sufficient to shew the impropriety and danger of the attempt to overcome by force the difficulties opposed to the introduction of an instrument after it has passed the ligament of the bulb, I shall not take up the time of the Society by dwelling more upon the subject, nor shall I here enter upon the very important question of the propriety of using force to overcome obstructions in any part of the canal*.

I shall now beg leave to draw the attention of the Society to a question connected with the anatomy of that part of the urethra which is surrounded by the ligament of the bulb, during its healthy state, but more particularly while suffering under a slight attack of inflammation.

In the accompanying drawing of the natural form of the canal, we see that it becomes suddenly narrow at the bulb. This abrupt diminution of the calibre of the urethra must of itself be a cause of difficulty in passing an instrument. If to this we add the obstruction occasioned by the natural curve of the canal being here likewise suddenly

* This question is discussed in the Notes made by me to the last edition of the work, "On the Diseases of the Urethra, by Mr. Charles Bell." See particularly the note, p. 156.

changed (for the ligament is higher than the sinus of the bulb), we shall admit that the mechanical impediments to the introduction of an instrument are greater at this point than at any other.

The accuracy of this observation will be acknowledged by those who have superintended the operations of students, as it is invariably at this part that they are foiled in their first attempt to pass a catheter in the dead body.

If to these impediments, we add the difficulty occasioned in the living body by the contraction of the muscles which surround this part of the urethra, and which is always excited by a slight inflammation of the membrane, we shall understand how the spasmodic affection which comes on, the moment a bougie touches the inflamed part, combined with what I have called the mechanical difficulties, may produce so complete an obstruction to the entry of an instrument as to give rise to the idea of the presence of stricture.

Here I ought also to state a fact which, if it occurs under the circumstances just mentioned, may be an additional source of error to one not fully acquainted with the natural structure of the parts. When a bougie is obstructed at the bulb, its upper surface may be so cut or indented by being pressed against the lower edge of the ligament, as to have exactly the same appearance as that which has been

have been led to the following conclusion (and which has not been hastily formed, as the preparations on the table will testify):—if a very narrow stricture has existed for a certain time, and the patient has suffered occasional attacks of retention of urine, a sac has probably formed.

This observation I confidently make, though at the same time I acknowledge, that I cannot with accuracy point out any particular symptoms, by which we may predict the formation of a sac; I will, however, hazard the opinion that, when in severe cases of stricture, there is a peculiar irritation about the back part of the bladder and between it and the rectum, especially if this occurs after voiding urine, we may suspect that a sac has formed.

The following questions naturally occur to us. If a sac has formed, is it ever spontaneously removed? Is it not probable, that a certain quantity of urine will generally lodge in the sac? What will be the consequences of the lodgment of the urine?

The difficulty of determining whether certain symptoms are produced by the presence of the sac, or by some other cause of irritation, will make it almost impossible to resolve with certainty the first question; the second, I fear, must be answered in the affirmative; and in reply to the third and most important, I would be inclined to say, that the

lodgement of urine in a sac produces a very peculiar train of symptoms, constituting a disease that is often fatal, the patient's death being occasionally preceded by symptoms of peritonitis. I have also observed, that the sufferings of the patient are of a very different nature from what are considered the more common consequences of stricture. The cases upon which I have founded these observations I shall not at present detail, my object being to direct others to the question; I may, however, again refer to the preparations on the table, as shewing that I have not made the statements without sufficient evidence, that a sacculated state of the bladder is a frequent consequence of stricture*.

While upon this subject, I should not omit to allude to certain cases, which, though not uncommon, have scarcely been described by any au-

* There is another question connected with the sacculated state of the bladder, which is too important to be more than alluded to in this inquiry, viz. whether there is not much danger of calculi being formed from the urine lodging in the sac?

Several specimens of stones in sacs of the bladder are placed upon the table; but I am not prepared to say whether the sacculi in these examples were formed in consequence of stricture of the urethra, or of the irritation under which the bladder of a person, with symptoms of gravel, generally suffers. It cannot, however, I presume, remain a question, that the formation of stone is to be considered as one of the dangers attendant upon a sacculated bladder, whatever may have been the original cause of the sac being formed.

thor: I mean the fistulous communication between the rectum and bladder, which is sometimes the consequence of the formation of a sac in the bladder, but more usually of a sacculated state of the prostate. It is almost needless now to say, that both of these have generally their origin in stricture of the urethra; but the important fact must not be overlooked, that the prostate itself is very liable to become sacculated, even though there be no stricture. The miserable condition of a patient with such a disease, and the little hopes we can hold out of doing more than alleviating his suffering, after the fistula is established, are too well known; but it is this circumstance, in addition to what has been already stated, and the hope of exciting others to engage in the investigation, that induces me to inquire whether we cannot avert these most fatal effects of stricture.

In doing so, the Society will, perhaps, permit me to make some observations on the condition of those who are labouring under such strictures as are likely to produce some of the consequences just stated.

I shall suppose a case which is common, and must be familiar to many members of the Society.

A patient has had a stricture near the bulb for several years; every plan of treatment, as by bougies, caustic, and forcing, has been tried, but with

Since the bladder is in a constant state of irritation, it is very probable that if the patient should catch cold, or dissipate in the slightest degree, there will be complete retention of urine.

If this should happen, what must be the consequence? The state of the stricture is such, that neither a catheter nor a bougie can be passed; therefore, if the patient be not immediately relieved, and this with great care, by cutting into the perineum, or by puncturing the bladder, he must either die of the irritation caused by the distended bladder, or the urethra will burst behind the stricture, and the urine necessarily, in a highly acrid state, be effused into the scrotum. If this last should be the result (which it too commonly is in such cases), and if the patient be not then treated with skill and decision, he will probably die in the course of three days; or should he escape the immediate danger, he will run much hazard of sinking under the extensive sloughing of the scrotum and penis, which almost invariably follows rupture of the urethra, when a free passage for the evacuation of the effused urine has not been made.

The cases that occur almost weekly in London, and the histories which are contained in the catalogue of the preparations of stricture in the Museum of Great Windmill-street, will prove, that

this is not an overcharged picture, but that it is a fair statement of a very common case.*

But if complete retention of urine and the consequences just mentioned, do not ensue, what must we fear from the bladder being kept in a constant state of irritation! If the patient is not suddenly carried off by the fever consequent upon the irritation, the probability is, that either the prostate gland will become disorganised and sacculated, or that sacs will form in the bladder, and in consequence of this, as has been already attempted to be shown, a patient may gradually sink, worn out without any distinct symptoms.

Under such circumstances, are we not entitled to say, that something decided should be done, with a view to remove the stricture, and relieve the bladder?

With this object, should a catheter be attempted to be forced through the stricture, or should the bladder be punctured? The proposal of forcing the stricture is decidedly wrong, because the portion of the urethra which is contracted is probably much firmer and stronger than any other part of the canal, and is, perhaps, of the same cartilaginous

* See the numerous and important examples which are detailed in the third edition of the Treatise on the Diseases of the Urethra by Charles Bell.

nature as in several of the preparations on the table, in some of which the stricture is so hard, that it was necessary to use the knife in the manner of a saw before it could be divided.*

Puncturing the bladder would be infinitely safer than the attempt to force the stricture, but it would not be effectual, as it would only afford a temporary relief. Seeing the many dangers to which a patient, in such a condition, is liable; and having, by experience, found that, when the urgent symptoms (which we must expect) do come on, prompt measures must be used, or our patient will be lost; are we not entitled to inculcate the propriety of performing an operation while the parts are yet comparatively in a favourable state? The proposal is the more encouraging, as the operation, if dex-

* The strictures on the table are good examples in proof of the little value of the late proposals to cure such diseases by complicated machines, called dilators. We may be pleased with the ingenuity displayed in the mechanism of these instruments, the invention of which is claimed both by English and French; but when we look upon them as instruments intended to cure stricture, we can only be amused, for it is quite impossible to introduce even the point of the smallest of them into such a stricture as should be considered difficult to manage. The circumstance of the possibility of passing a dilator through a stricture, so as to be used in the manner described by the inventors, should be sufficient proof that the stricture is so slight, that it might be easily cured by the common methods. In several of the examples on the table, the narrowing of the canal is to such a degree, that it is not possible to pass more than an eye probe or hog's bristle through the stricture.

terously performed, is not severe, nor attended with any danger, and it is moreover one which will probably not only afford immediate relief to the bladder, but also, if not the means of restoring the patient to perfect health, put him into a condition of much greater ease and comfort than could be expected, if his disease were to terminate in what we should consider its most favourable natural issue.

The operation is not severe, indeed, much less than what almost any patient will cheerfully submit to, in the mere hope of being relieved from the inconvenience of a fistula in perineo. It is merely to cut through the stricture, to introduce a catheter from the glans, and endeavour to make the urethra entire, by allowing the wound to granulate over the catheter*.

Some may, perhaps, consider, that such a serious operation is not warranted for the relief of a trifling disease; but I hold that the question involves the life or death of the patient, and whether with the knowledge that this same *trifling disease* is daily

* I should here state distinctly, that the question of the manner of operating is quite changed when there is an immediate necessity for relieving a patient suffering from distended bladder. Upon this I shall not enter, as the question is fully discussed in the work on The Diseases of the Urethra, to which I have already referred. My object at present is to inculcate the necessity of a patient submitting to an operation, although he may not at the moment be in immediate danger.

fatal in London, we are to allow our patient to be insidiously brought into a state in which we can afford no relief. Why should we not reason with him as we would, had he a malignant tumour or aneurism? As to the difficulty of the operation, I can confidently assert there is none, but, on the contrary, that it may be very easily performed. Experience has shown that it is so, and the circumstance of the urethra being almost invariably dilated behind the stricture proves, that when the stricture is divided, the principal object of the operation is attained.

The only difficulty likely to occur in the first stage of such an operation is, that in introducing the catheter with the intention of passing it down to the stricture, as a mark for our incision into the urethra, it may enter into one of the false passages that have been previously made in the ineffectual attempts to force the stricture*.

* There is on the table a preparation in example of the occurrence of this accident. The operation, in this case, was performed under great disadvantages, and after the patient had been saved from immediate danger by puncturing the bladder. The stricture was found so firm, and so much mischief had been committed on the urethra, in the previous attempts to force instruments into the bladder, that cutting the stricture was considered to be the only means of restoring the canal; but the wound in the perineum was attacked with erysipelas, under which the patient, weakened by his great sufferings previous to the operation, sunk. This is the only example in which I have known the death of the patient follow the operation, and here the cause of death was probably the previous irritation.

In the second stage of the operation, we may have some difficulty in discovering the opening of the urethra after the stricture is cut through, for there may be false passages continued even beyond the point of stricture, or the urethra, by its elasticity, may be so close that we cannot see it; these difficulties have occurred in one or two cases, but are more easily surmounted by observing the point from which the urine issued. To have the advantage of the passage of the urine to direct us to the proper opening, we ought to enjoin the patient to retain his water for some time previous to the operation; but if (which is very probable) he is not able to do so, and if there be, after cutting through the stricture, much difficulty of carrying the catheter into the bladder, we ought to desist from all attempts, until the bladder is again filled, for then, with a little care, we may easily discover the proper opening, and pass the catheter into it.

I should also state, that in one case, where the stricture was very long and hard, a small canula was introduced into the bladder, and kept there for four days; at the end of this time, the opening was so much enlarged that the catheter was easily passed, the only difficulty being to carry it through the granulations which, in the interval, had risen luxuriantly from the sides of the wound. It is scarcely necessary to add, that after the wound has closed over the catheter, the urethra must, for a considerable time, be kept free by the use of the bougi

If the operation should so far fail that the wound of the urethra does not readily close, in what condition would a patient be placed, who, it is presumed, was in a state of great danger previous to the operation? It has been already alleged, that the most happy accident that could befal him, would be the formation of a fistula. Now, though this would be the worst effect that could ensue from the operation, still it would differ from the spontaneous fistula, in several important respects.

The stricture would be removed, which is the first step towards the cure of fistula, and there would be only a single and simple wound in place of the multitude of callous sinuses which take place in spontaneous fistula.

May I, in conclusion, be permitted to say, that since patients have not only been rescued from imminent danger, but restored to a better condition than what they had been previously in for years, by a simple and safe operation, we should be encouraged to perform it more frequently, and before the parts about the stricture become completely disorganised*.

* Since this paper was read before the Society, I have seen a patient upon whom the operation described above had been performed. His appearance was so altered that I hardly recognised him. Previous to the performance of the operation he was so re-

In support of this view, the papers of several distinguished members of this Society might be adduced as illustrative of the great difficulty of performing such an operation, when the parts behind and surrounding the stricture have become callous and diseased by repeated attacks of inflammation.

duced by constant irritation, that he appeared like a broken down man of sixty; but now he is a hale and strong-looking man.

APPENDIX TO MR. SHAW'S PAPER.

A FEW preparations from the fourteenth division of Mr. Charles Bell's collection are placed upon the table, to illustrate the preceding paper.

With reference to the first observation made in the paper, it is merely necessary to repeat, that there is no specimen in the collection of stricture or narrowing of the urethra behind the bulb.

Examples of the enlargement of the prostatic and membranous portions of the canal, in cases of narrow stricture, are so common, that no preparations are brought merely for the purpose of substantiating the second observation, particularly as its correctness is shown by the specimens offered in illustration of the enlargement of the ducts of the prostate; and even this latter consequence is so common an attendant on stricture, or on irritation in the bladder, that only a few specimens are offered.

The preparations marked XIV. 1. M. 4., and XIV. 1. M. 4. a., are good examples of the dilatation of the canal behind the stricture, and of the enlargement of the ducts; in 4. a. several of the ducts are so large that they would admit the point of a full-sized bougie. In XIV. 1. M. 50. a., there is a good illustration of the labyrinth formed by the enlargement of the ducts, and by the bands which cross the dilated part behind the narrow stricture in the anterior part of the canal.

This preparation not only shows the great difficulty there may be of carrying a catheter into the bladder, after a stricture has been removed, but also affords a convincing proof of the error of considering the urethra as muscular. On this subject, there is a paper by me in the tenth volume of the Society's Transactions.

XIV. 1. M. 26. is likewise a good illustration of the same facts.—Here we have also to observe a false passage.

The enlargement of the ducts so generally accompanies disease of the prostate, that I have brought only two specimens in illustration. In XIV. 1. M. 59. the enlarged ducts may be distinctly observed, and the preparation is dissected so as to show the part of the gland that is generally enlarged in the disease which is com-

monly, but I suspect erroneously, called *enlargement of the middle or third lobe.*

XIV. 1. M. 61. a. This affords an example of the accident to which I have alluded, of the catheter entering one of the enlarged ducts, and passing through the substance of the gland into the bladder. It is also worthy of observation, that the peritoneal coat of the bladder formed the sac of a common hernia. This bladder has been punctured above the pubes.

I should apologize to the Society for not having presented more examples of a sacculated state of the bladder than are placed upon the table, but I hope I shall be excused, on the ground that several of the specimens preserved in our museum are so large, that it would have been dangerous to bring them. I trust, however, that the specimens on the table will be considered sufficiently numerous to warrant the conclusions drawn in the paper.

In XIV. 1. M. 81. the sac is so complete, that it is difficult at first view to determine which is the original cavity of the bladder.

The manner in which XIV. 1. M. 82. is prepared, not only shows the sacs distinctly, but also the great size to which the bladder may be distended in such cases.

In XIV. 1. M. 41. c. we have a fine example of a firm and hard stricture, and which is, at the same time, so narrow as to admit only a bristle. There is a large sac in the state of abscess between the bladder and rectum; a bristle doubled up is introduced into the communication between the bladder and the sac. I occasionally saw the patient from whom this was taken, during the six months' previous to his death; he would not submit to an operation, and at last gradually sunk without any marked symptoms.

XIV. 1. M. 41. a., is also a very fine example of the effects produced by stricture. The patient from whom this was taken had stillicidium urinæ for years, with frequent attacks of retention of urine; he at last sunk under the constant irritation. I was not permitted to open the abdomen, and, in removing the bladder through the perineum, cut across the large sac that had formed between the rectum and bladder, but the communication that was between the sac and the bladder may still be seen. Great and almost constant irritation in the upper part of the rectum, was one of the most distressing symptoms which the unfortunate gentleman had. The prostate gland has become so completely disorganized that it forms a mere sac.

In XIV. 1. M. 41. b., the glandular part of the prostate is so disorganized that the external cover-

ing appears like the boundary of an abscess; behind the prostate, there is a second sac which communicated with the abdomen.

XIV. 1. M. 41., is from a person who had suffered from stricture for many years; the immediate cause of death was a small calculus plugging up the narrow stricture; the prostate, though enlarged, is a complete sac.

The next series of preparations is offered in illustration of the worst consequences of the sacculated bladder, viz. of the sacs being often the depositories of calculous matter.

In XIV. 1. M. 73., a small calculus is seen imbedded in a sac at the fundus of the bladder.

XIV. 1. M. 67., exhibits a large sac in the fundus of the bladder, from which a stone weighing ℥iv. was taken, after the patient's death.

In XIV. 1. M. 75., we have a remarkable example of sacculated bladder with calculi lodging in the sacs; the opening of one of the sacs is so much smaller than the calculus within its cavity, and is so much detached, that it resembles a tumor adhering to the coats of the bladder.

I have placed upon the table the preparation XIV. 1. M. 40. b., as it is an excellent example to

show the consequences of such a stricture as has been described in the paper. The firm cartilaginous stricture, so narrow that a bristle cannot be passed through it, the false passage made between the rectum and bladder, in the attempt to force a catheter through the stricture, and the rupture of the urethra behind the stricture, are all well seen in the preparation. The high degree of inflammation, in consequence of the retention of the urine, is truly depicted in the accompanying drawing. The state of the bladder and urethra is such as to entitle us to insist on something decided being done to relieve a firm and cartilaginous stricture.

XIV. 1. M. 40. a. This is the preparation alluded to in the description of the operation at page 477, of the danger of the catheter being passed into one of the false passages made in the previous attempts to force the stricture; the channel for the urine, in this instance, was made by forming a communication between the false passage, and the wide part of the urethra behind the stricture.

INQUIRIES

RESPECTING THE

ANATOMY OF THE EYE,

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COMMUNICATED BY

MR. EARLE.

Read June 3, 1823.

IN the following Memoir, I propose to discuss some of those points relating to the anatomy of the eye, which have been rendered interesting by the difference of opinion entertained respecting them; as well as to inquire into the structure and application of those parts which, from their beauty, or peculiarity of appearance, have attracted particular attention. I shall at once proceed with the subject, without further preliminary observations.

On the Passage of the Optic Nerve through the Sclerotic Coat.

The description usually given of the entrance of the optic nerve is, " that it arrives at the back of

the eye, enclosed in a strong sheath, continued from the dura mater, and firmly connected with the sclerotic: that when it approaches the globe of the eye, it becomes diminished in size, and in its passage through the sclerotic, is contracted into the form of a cone, the rounded apex of which comes in contact with a membrane perforated with small holes called the *lamina cribrosa*, which closes up on the inside the hole in the sclerotic through which the nerve passes: that through the perforations in this membrane the nervous fibres are transmitted, and within the eye form a slight projection from which the retina originates."* This notion of a *lamina cribrosa* has had its origin from Albinus†, and has arisen from examining the part after the retina had been washed away, and the optic nerve cut off on the outside close to the sclerotic; an appearance answering the description given of the *lamina cribrosa* being thus produced. This *lamina cribrosa*, however, appears to be nothing else than the extremity of the optic nerve where the firmer tubular portion is discontinued. If the sheath of the nerve be slit up through the sclerotic into the globe of the eye, the nerve does not appear to cease with a rounded apex behind the *la-*

* Haller Elementa Physiologiæ, tom. v. lib. xvi. sect. 2.—Zinn de Oculo, cap. iii. sect. 2. Sabatier Anatomie, tome ii. p. 70.—Cuvier leçons d'anatomie comparée, tom. ii. p. 412. Rees's Cyclopædia, article Eye.—C. Bell's Anatomy, vol. iii. p. 50.

† Moeller observationes circa retinam, sect. 12, 13. in Halleri disp. anatom. select. tom. vii. supplem.

mina cribrosa, as has been represented; but it is obvious that they are altogether continuous, without any line of separation between them. The *lamina cribrosa*, as it is called, has the same white colour as the nerve, without any of the dark tinge of the surrounding sclerotic, and, if compared with a section of the nerve at some distance from the eye, is found to present exactly the same appearance. If the optic nerve be forcibly compressed, the medullary matter is forced through these orifices at its extremity in the bottom of the eye in vermicular coils, as the sebaceous matter is forced from the follicles in certain parts of the skin; a similar appearance is produced upon the cut extremity of any part of that portion of the nerve which is external to the cavity of the scull. After death, especially if the parts be placed for some time in water, the medullary matter of the nerve is projected in the form of a button or tuft in the bottom of the eye; an appearance arising either from the contraction of the firmer part or *neurilema* upon the medullary portion, or from the medullary matter imbibing the water, and thus becoming too large in quantity for the unyielding structure within which it is enclosed: at the same time, a similar tuft or button presents itself at the cut extremity of the nerve. This button or projection has been noticed by most anatomists in their descriptions of the organ, and is represented in a remarkable manner by Söemmering, in his enlarged outline section of the eye; but I think the explanation now given

respecting it will prove correct upon examination. In reptiles and fishes the nerve is not enclosed in a cellular or tubular cylinder as in *mammalia*, but folded in a peculiar manner, consequently in them, in place of a button or tuft presenting itself in the bottom of the eye, a stellated or crucial medullary projection has been observed, and may be well seen in the eye of the turtle, conger eel, and others: I have not myself, however, observed this appearance in those animals immediately after death. The facts just stated, if correct, are worthy of the particular attention of anatomists, as affording an excellent example of the extraordinary and important changes which animal structure undergoes when the influence of vitality no longer predominates over the operation of physical forces or chemical affinities. What I have just said respecting the expression of the medullary part of the nerve in the form of vermicular coils, strengthens the opinion that the nerve consists of a number of tubes containing this medullary matter; but a careful examination of a longitudinal section leads rather to the conclusion that it is deposited in a cellular structure, or at least that the communications between the medullary fibres are so frequent as to cause the part to assume such an appearance. Having removed the medullary part from a portion of the optic nerve of a whale by gentle pressure, and passing water through it, I filled it with mercury, and allowed it to dry; upon making a longitudinal section of it, the surface presents an irre-

gularly cellular, rather than a tubular appearance. As this subject, however, belongs rather to the inquiry respecting the structure of nerve in general, I shall not proceed further with it at present, especially as the above opinion differs somewhat from that of Reil, who has probably given more attention to this point*.

On the Termination of the Retina anteriorly, the canal of Petit, and the Ciliary Processes of the Vitreous Humour.

In descriptions of the anatomy of the eye there is no part of the subject upon which there has been so much diversity of opinion as upon the question of the termination of the retina anteriorly. Some maintain that the retina, that is both its medullary and vascular layer, terminates at that part of the vitreous humour where the ciliary processes begin to adhere†; others, that it is continued to the lens‡; others, that it is the vascular layer only which extends so far§; and others again, that the vascular

* Reil. Exercit. Anat. Fac. 1 de Structura Nervorum, p. 32.

† Zinn de Oculo, cap. iii. sec. 4.—Winslow Exposition Anatomique. Tete. No. 223. Söemmering Icones oculi humani.—Cuvier Leçons d'Anatomie comparée, tom. ii. p. 418.—Rees's Cyclopedia, article Eye.

‡ Monro on the Brain, Eye, and Ear, p. 94.—Lietaud Essais Anatomiques, p. 118.

§ Halleri Elementa Physiologiæ, tom. v. lib. xvi. sect. 2.—Bichat Anat. Descript. tom. ii. p. 447.—Dictionnaire des Sciences Med. Oeil.—Cloquet Traité d'Anat. tom. ii. p. 727.

layer is continued even over the lens*. The following appears to me to be the state of the parts. On removing the choroid, ciliary processes, and iris, we see the retina terminating with a defined dentated margin, about a quarter of an inch from the circumference of the lens: between this line of termination and the lens, the vitreous humour retains upon its surface part of the black pigment which covered the ciliary processes. If the eye be examined shortly after death, removing the black pigment from this part of the vitreous humour with a camel hair pencil, there is an appearance of, at least, the vascular layer, being continued to the lens; this part not being so transparent as the rest of the hyaloid membrane, or so opaque as the retina. From such an examination I was led to conclude that the vascular layer was continued to the margin of the lens, but I adopted a contrary opinion after I had witnessed the change which took place when the part had remained twenty-four hours in water; the retina then separating with a slight force, and frequently detached by the disturbance given in making the examination. If, after removing the choroid, without disturbing the retina, the part be allowed to remain in water for some days, the medullary part of the retina begins to give way, and may be altogether detached by agitation in the water, leaving the vascular layer firmly attached at the line of termination just described.

* C. Bell's Anatomy, vol. iii. p. 53.—Sabatier Traite d'Anatomie, tom. ii. p. 71, 1781.

With all the care I could bestow, I have, however, never succeeded in separating this layer from the vitreous humour further. If the maceration be continued for a few days longer, the vascular layer of the retina gives way, the larger vessels alone remaining attached at the original line of termination of the retina, and appearing to enter the hyaloid membrane at this part; the appearance which at first so much resembled the vascular layer proceeding towards the lens, remaining unchanged, being, in fact, part of the vitreous humour itself. The circumstance which has most strengthened the notion of the retina being continued forward to the lens is, that often on raising the choroid and ciliary processes from the vitreous humour, we find those processes covered in several places by a fine semi-transparent membrane insinuated between the folds; this is supposed to be the vascular layer of the retina, but is really the corresponding part of the hyaloid membrane which is torn up, being firmly united to this part of the choroid. If the sclerotic, choroid, iris, and retina, be removed one or two days after death, leaving the vitreous humour with the lens imbedded on its anterior part, we observe a number of *striæ* on the vitreous humour converging toward the circumference of the lens, corresponding in number, size, and form, to the ciliary processes, giving the same appearance collectively that the circle of ciliary processes, or *corpus ciliare* does on the choroid, and narrowed toward the nasal side as the *corpus ciliare* is. This

appearance has been noticed by most authors *, but some describe it as arising merely from the marks left by the ciliary processes, while others consider these *striæ* of the same nature as those productions of the choroid, and call them the ciliary processes of the vitreous humour; it is the *corona ciliaris* of Camper and Zinn. If we remove the black pigment with a camel hair pencil, we leave those productions on the vitreous humour more distinctly marked than when covered by the colouring matter, and presenting all the characters above stated; commencing behind with a well-defined margin, and terminating anteriorly by attachment to the capsule of the lens, the furrows between them capable of receiving the ciliary processes of the choroid, and the folds calculated to be lodged in the corresponding furrows of these processes. Fig. 1. Plate IX. is a very faithful representation of the vitreous humour of the human eye thus treated. If the cornea and iris be removed from a human eye within a few hours after death, a dark circle surrounding the lens between it and the anterior extremities of the ciliary processes may be observed: this is the part of the corona ciliaris of the vitreous humour to which the ciliary processes of the choroid do not extend, which appears dark on account of its perfect transparency; the converging *striæ*

* Zinn de Oculo, cap. iv. sect. 3.—Halleri Elementa Physiol. lib. xvi. sect. 17.—Camper de quibusdam Oculi partibus in Halleri Disp. Anat. Select. vol. iv.—Hovius de Circulari Humorum Motu in Oculis.

are evident, even on this part where the ciliary processes are not insinuated, interrupting the view if we attempt to look into the bottom of the eye by the side of the lens. It is, in my opinion, therefore, certain, that part of the vitreous humour, as that transparent body is called, enters into the formation of the posterior chamber of the aqueous humour. The demonstration of this fact is, however, attended with difficulty, because the flaccidity arising from even slight evaporation of the fluids of the eye, permits the ends of the ciliary processes which present themselves in the posterior chamber of the aqueous humour to fall towards the circumference of the lens, and appear attached there. For myself I can say, that, having made the dissection in the way just pointed out, the eye of course in water, and beneath one of those globular vessels which I formerly described*, I could see to the bottom of the eye through the space in front of the vitreous humour, between the ciliary processes and the margin of the lens; this space is, however, perhaps larger in some individuals than in others.

Each fold of the corona ciliaris of the vitreous humour seems to consist of two layers of hyaloid membrane, capable of being separated one from the other, and distended by inflation, and admitting of communication with each other round the lens. It appears to me that the canal of Petit, or canal godronné, is formed in consequence of these

* Philosophical Transactions for 1819.

folds receiving the injected air one from the other; it is, however, generally described as being formed by the membrane of the vitreous humour splitting at the circumference of the lens, one layer going before and the other behind that body, the canal existing between these two layers and the capsule of the lens. That the capsule of the lens has no share in the formation of the canal of Petit, I conclude from filling this canal with air, and allowing the part to remain for some days in water, and then with great care removing the lens included in its capsule; this I do not find, however, causes the air to escape from these cells, but leaves them presenting nearly the original appearance, and after the air has escaped I can pass a small probe all round in this canal, raising by this means the folds from the hyaloid membrane. It is difficult, however, to preserve the air in these folds for any length of time under water, because the tendency of the air to ascend causes the rupture of the membrane, by which it is allowed to escape. After the lens, included in its proper capsule, has been detached from its situation on the vitreous humour, the space it occupied presents the appearance of a circular depression, surrounded by those productions of the hyaloid membrane of which I have just spoken, the vitreous humour remaining in every respect perfect, notwithstanding this abstraction of the lens.

On the Capsule of the Chrystalline Lens.

The real nature of the capsule of the lens has not, I think, been sufficiently attended to; its thickness, strength, and elasticity, have certainly been noticed*, but have not attracted that attention which a fact so interesting, both in a physiological and pathological point of view, deserves. That its structure is cartilaginous, I should conclude, *first*, from its elasticity, which causes it to assume a peculiar appearance when the lens has been removed, not falling loose into folds as other membranes, but coiled in different directions; or if the lens be removed by opening the capsule behind, and withdrawing it through the vitreous humour, allowing the water in which the part is immersed to replace the lens, the capsule preserves in a great degree its original form, especially in the eye of the fish: *secondly*, from the density and firmness of its texture, which may be ascertained by attempting to wound it by a cataract needle, by cutting it upon a solid body, or compressing it between the teeth: *thirdly*, from its permanent transparency, which it does not lose except on the application of very strong acid or boiling water, and then only in a slight degree; maceration in water for some months, or immer-

* Zinn de Oculo, loc. citat. Haller. Element. Physiol. lib. 16. sect. 20. Petit, Mem. de l'Acad. Roy. des Sciences, 1730. p. 444. Bichat. Anat. Descrip. tom. ii. p. 457.; and many others

sion in spirit of strength sufficient to preserve anatomical preparations, having little or no effect upon it. If the lens be removed from the eye of a fish dressed for the table, the capsule may be raised by the point of a pin, and be still found almost perfectly transparent. This combination of density and transparency gives the capsule a peculiar sparkling appearance in water, in consequence of the reflection of light from its surface, resembling a portion of thin glass which had assumed an irregular form while soft; this sparkling I consider very characteristic of this structure. The properties just enumerated appear to me to distinguish it from every other texture but cartilage; still, however, it may be said that cartilage is not transparent, but even the cartilage of the joints is semi-transparent, and, if divided into very thin portions, is sufficiently pellucid to permit the perception of dark objects placed behind it, and we obtain it almost perfectly transparent where it gives form to the globe of the eye, as in the sclerotic of birds and fishes. If the soft consistence, almost approaching to fluidity, of the external part of the lens, be considered, the necessity of a capsule capable itself of preserving a determinate form is obvious. If the lens were enclosed in a capsule such as that which envelopes the vitreous humour, its surface could not be expected to present the necessary regular and permanent curvature; nor could we expect that if the form of the lens were changed, it could be restored without this provision of an elastic capsule;

hence this perhaps might be adduced as an argument in favour of the hypothesis that the eye is adapted to distance by a change in the form or situation of the lens. In the eye of man, and other mammalia examined by me, I do not find the capsule of uniform thickness throughout, but the anterior segment is much stronger than the posterior; this I account for from the circumstance of the anterior portion receiving no support from other parts, while the posterior is imbedded in the vitreous humour.

The lens has been considered by some as having no connexion with its capsule*, and consequently that its formation and growth is accomplished without the assistance of vessels; such a notion is so completely at variance with the known laws of the animal economy, that we are justified in rejecting it, unless supported by unquestionable proof. The only reasons which have been advanced in support of this conclusion are, the failure of attempts to inject its vessels, and the ease with which it may be separated from its capsule when that membrane is opened. These reasons are far from being satisfactory; it does not necessarily follow that parts do not contain vessels, because we cannot inject them; we frequently fail when there can be no doubt of their existence, especially where they do

* Petit, Memoires de l'Acad. Roy. des Sciences. 1730. p. 436. Halleri Elem. Phys. vol. v. lib. 16. Dict. des Sciences Med. art. Cristallin.

not carry red blood. I have not myself succeeded in injecting the vessels of the lens, but I have not repeated the trial so often as to make me despair of accomplishing it, more especially as Albinus, an anatomist whose accuracy is universally acknowledged, asserts, that after a successful injection of the capsule of the lens, he could see a vessel passing into the centre of the lens itself*. Lobé, who was his pupil, bears testimony to this†. The assertion that the lens is not connected with its capsule, I think I can show to be incorrect: it has been made from want of care in pursuing the investigation, and from a notion that a fluid exists throughout between the lens and its capsule. When the capsule is opened, its elasticity causes it to separate from the lens; especially if the eye be examined some days after death, or has been kept in water, as then the lens swells, and often even bursts the capsule and protrudes through the opening, by which the connexion is destroyed. I have however satisfied myself that the lens is connected with its capsule (and that connexion by no means slight) by the following method. I remove the cornea and iris from an eye, within a few hours after death, and place it in water, then with a pair of sharp pointed scissors I divide the capsule all round at the circumference of the lens, taking care that the division is made behind the anterior con-

* Annotationes Academicæ, lib. i. cap. 7.

† Lobé, de Oculo Hum. in Halleri Disp. Anat.

vexity, so that the lens cannot be retained by any portion of the capsule supporting it in front. I next invert the eye, holding it by the optic nerve, when I find that the lens cannot be displaced by agitation, if the eye be sufficiently fresh. In the eye of a young man about six hours dead, I found that, on pushing a cataract needle into the lens, after the anterior part of the capsule had been removed, I could raise the eye from the bottom of the vessel, and even half way out of the water, by the connexion between the lens and its capsule. It afterwards required considerable force to separate them, by passing the needle beneath the lens, and raising it from its situation. I believe those who have been in the habit of performing the operation of extraction, have occasionally encountered considerable difficulty in detaching the lens from its situation after the capsule had been freely opened, this difficulty I consider fairly referable to the natural connexion just noticed.

The fluid called *aqua Morgagni*, supposed to surround the lens and separate it from its capsule, appears to me, when it does exist, to be confined to the anterior part. I once met with it in the human eye, within five or six hours after death, and at longer periods in a few other instances, but how far the product of disease I cannot determine. In the eyes of sheep and oxen yet warm, I do not perceive the least appearance of such a fluid; after some time, however, has elapsed, it is found in

considerable quantity, but evidently in consequence of that change which takes place after death, by which fluids are permitted to escape into situations not formerly occupied by them. Petit* found only half a grain of this fluid within the capsule of the human lens, and could not obtain sufficient for analytical experiment from eighteen eyes; he also says he found it in one eye and not in the other.

On the Membrane of the Aqueous Humour.

When we find a fluid contained in such a cavity as that in which the aqueous humour is lodged, the boundaries of which consist of parts so different in function and structure, we must conclude from analogy that this cavity is lined by a membrane capable of secreting and containing this fluid; at least the knowledge we have as yet acquired of the animal economy justifies us in drawing such a conclusion. The existence of this membrane has, however, rather been admitted from reasoning, than proved by demonstration. It must be admitted that a membrane lining the inside of the cornea has been described, and considered as the membrane of the aqueous humour, but this membrane lining the cornea appears totally different both in structure and function from a membrane capable of performing such an office; it is in fact

* Mem. de l'Acad. Roy. des Sciences, 1730. p. 445.

cartilaginous*, and of precisely the same nature as the capsule of the lens, and placed here, as I should suppose, to answer the same purpose which I have assigned to the capsule of the lens, that is, to enable the part to preserve correctly the regular degree of curvature. Its similarity in structure to the capsule of the lens does not, on comparison, admit of question; the same elasticity, the same tendency to coil when cut, the same permanent transparency after maceration or immersion in hot water, acid, or spirit, identify both structures. To the cornea it bears no resemblance; no two membranes can, perhaps, be more dissimilar. It is easily demonstrated; merely scraping the surface, without any previous preparation, raises it in shreds. It separates on immersing the cornea in any fluid, which causes that membrane to become corrugated, as boiling water, acid, or spirit; but the best way to display it is to allow the eye to remain a few days in water, and then with a pair of sharp-pointed scissors carefully cut the cornea all round at its junction with the sclerotic, taking care that the point of the scissors does not puncture the elastic membrane. As soon as the cornea is nearly divided, there is little diffi-

* Its cartilaginous nature was noticed by Des Mours, about the middle of the last century. I have not met his memoir on the subject.—See De Wenzel, Manuel de L'Oculiste, art. Tunique de l'Humeur Aqueuse: see also Ribes, Mem. de la Soc. Med. d'Emulation, tom. vi. p. 656. It has been described by Mr. Saurey in the eye of the hare.

On the Foramen, Yellow Spot, or Fold of Söemmerring.

The justly celebrated anatomist, Söemmerring, some time previous to the year 1795, observed in the retina of the human eye, nearly in the axis of vision, an appearance which had escaped the attention of all preceding anatomists*. He describes it as a hole in the retina, with a yellow margin, mentioning, as accidental, a fold which occupies the situation of this hole, and tends to conceal it, and thus accounting for its remaining so long unnoticed. This appearance is so constant and remarkable, that its existence may be very rationally considered essential to correct vision, and it, therefore, becomes an interesting object of speculation. The circumstances respecting it, which it seems important to ascertain, are, whether it is actually a hole in the retina, with a yellow margin; whether, in addition to this hole, the retina is folded or puckered in at this part; or whether the appearance of a hole arises from a deficiency of the medullary layer of the retina, without any orifice in its vascular layer. Both Söemmerring himself and many others† seem to consider that the fold is

* Söemmerring. S. T. Icones oculi humani.—De corporis humani fabrica. Vol. iv. p. 204.

† Söemmerring, as above. Article Eye, Rees's Cyclopedia. D. W. Söemmerring de oculorum hominum animaliumq; Sect. Horizont. p. 17.

accidental, and the consequence of changes occurring after death. It is here necessary to call to mind what those changes are with respect to the retina. If the eye had become flaccid previous to dissection, the retina, on being exposed, presents an irregular surface, arising from a number of folds diverging from the optic nerve as from a centre, and evidently produced by the loss of support, from the partial evaporation of the fluid of the vitreous humour. These folds, however, never observe any regular form, or preserve precise situations, and may be obliterated by changing the position of the eye in the water. They disappear altogether after the part has remained some time in water, in consequence of the vitreous humour becoming again distended, from imbibing the fluid in which it is immersed. It, however, requires no very great care or experience to distinguish between those accidental folds and the peculiar one in question. If the examination be made from without, removing the sclerotic and choroid behind, the retina appears to be forced or drawn at this point into the vitreous humour, to the depth of about a twelfth of an inch, the entire fold being something more than an eighth in length. At first there is little or no appearance of a hole, but after the eye has remained for some time in the water, the fold begins to give way, and a small slit makes its appearance, which gradually widens, and assumes the appearance of a round hole. This hole is large in proportion to the degree to which the fold has yielded; and when

the fold totally disappears, as it sometimes does, the transparent point gives the appearance which Söemmerring represents, of a hole with a yellow margin. If, instead of making the examination in this way from the outside, we view this part through the vitreous humour, the appearance of the hole is more remarkable; but still that part of the retina is evidently projected forward, beyond the level of the rest of that membrane. In the eye of a young man, which I had an opportunity of examining under peculiarly favourable circumstances, within five hours after death, I noticed the following appearances. The cornea and iris having been cut away, and the lens removed from its situation, I placed the part in water, beneath one of the globular glasses, and held it so as to allow the strong light of a mid-day sun to fall directly upon it, when the retina to the outside of the optic nerve presented unequivocally the appearance of being drawn or folded into the form of a cross or star, with a dark speck in the centre, surrounded by a pale yellow areola. I further satisfied myself of the prominence of the fold by holding a needle opposite to it, while the light shone full upon it; a shadow being thus cast upon the retina, which deviated from a straight line when passed over the situation of the fold. To ascertain whether there is actually a hole in the retina, or merely a deficiency of nervous matter at this point, I allowed the eye to remain for some days in water, until the connexions of the parts began to give way. I then introduced a small

probe between the retina and vitreous humour, the part still remaining in water, and, bringing the blunt point of the instrument opposite the transparent spot, attempted to pass it through, but found I could not do so without using force sufficient to tear the membrane. I also removed the nervous matter by maceration and agitation in water; and, on floating the vascular layer, found that I could no longer ascertain where the spot had originally existed, there being no hole in the situation previously occupied by the transparent speck.

I have been induced to dwell more particularly on this subject, because I hope that the investigation may lead, in some degree, to the explanation of the use of so remarkable a structure. If the existence of this projecting fold in the bottom of the eye, and in the axis of vision, be admitted, it may be asked, what is the state of the image formed on so irregular a surface? Is it equally correct throughout? Is there not a small part of the retina placed nearer the lens, by being thus projected in form of a fold? If the size of the image be proportioned to the extent of the retina, or formed according to our notions of the optical mechanism of the eye, must it not have very large vessels interposed between it and the sensible part of the retina? Is correct vision the result of the first and single impression of the image on the retina, or of repeated impressions on different parts of that membrane, by changes in the situation of the image?

I throw out these questions to provoke discussion, rather than to attempt to answer them myself.

In the year 1819, I gave a description of a membrane, which forms part of the structure of the retina, separating the medullary or nervous layer from the choroid coat. This description was read before the Royal Society, and published in the Philosophical Transactions. I had not then an opportunity of illustrating that description by drawings, but have since succeeded in procuring most satisfactory and faithful representations, from specimens most carefully and successfully prepared in the human eye, as well as in that of the sheep. As these drawings represent, in a very striking manner, the characteristic delicacy and peculiar appearance of this membrane, and fully explain its relation to the retina, I have added them to the present memoir; that of the human eye (Fig. 2. Pl. X.) represents also the state of the fold of Söemmerring when first exposed, and before the transparent point had become fully developed. (Fig. 3. Pl. X.)

On the Structure of the Iris.

In considering the structure of the iris, the question which it is most important to determine respecting it is, " Whether we can detect in it any peculiarity of appearance, which, when compared with the forms and arrangement of muscular bodies

in general, justifies us in concluding, that it belongs to that class of organs?" If, on the other hand, the muscularity of this organ be admitted, (from the phenomena which accompany its action being in unison with the laws which regulate muscular action in general,) in what part of this membrane does such muscular structure reside? I believe, most persons who are in the habit of making frequent examinations of the eye, have been struck by the remarkable appearance which the front of the iris presents in the living subject. This appearance is generally considered to be produced by vascular arrangement. The arteries are described as converging toward the pupil, and, when they approach that opening, ramifying and forming a chain of inosculations, at a short distance from its margin, thus dividing the iris into a greater and lesser ring. An appearance which justifies such a description is certainly to be observed, but is, I believe, altogether independent of the arrangement of the vessels. If the iris be attentively examined in the living subject, or under water after the cornea has been removed, a number of irregularly shaped masses may be seen projecting from the middle space between the circumference and the pupil. From the convexities of these masses, a number of elevated lines, equally irregular in size and number, proceed toward the pupil, and attach themselves at the distance of about a twentieth part of an inch from its margin, and from this point of attachment a number of much smaller *striæ* converge to the

edge of the central opening. It is quite impossible for words to give an adequate idea of this appearance; I have, therefore, caused a magnified drawing to be made from an excellent specimen; which specimen, along with some other preparations, illustrating the subjects of the present communication, I have presented to the Hunterian Museum, where they may be seen. (Vide Pl. IX. Fig. 1.) If I ventured to compare the appearance which I describe with any other with which we are acquainted, I should say that it resembled strongly the *carneæ columnæ* and *cordæ tendineæ* of the heart, both in form, arrangement, and irregularity of conformation. This structure is more strongly marked in the hazel than the blue iris; and, in many cases, the fleshy projections coalesce, by which they appear less distinct; but the loops or cords which arise from them always exist, and often project so much from the plane of the iris, as to admit of having a small probe or bristle passed beneath them. That this appearance of the iris does not depend on any particular disposition of its vessels, is, I think, obvious; from the thickness of these *striæ*, or cords, being so much greater than the vessels of the iris; from their being arranged in a manner altogether different from vascular inosculation; and finally, because the iris, when successfully injected and expanded, does not present that interlacement of branches surrounding the pupil, which has so often been described from observation of it in its uninjected state. If the iris

be macerated for a week or ten days in clean water, until the blood is removed from its vessels, and the pigment from its posterior surface, its texture yields so much as to permit us to extend it to double its natural size: it should then be spread out and secured upon a piece of wax, coloured by lampblack. In this condition, it seems to consist almost entirely of vessels converging in a serpentine form from the circumference to the pupil: the peculiar structure which I have just described in front, though rendered less conspicuous, yet still preserving its original character (Fig. 2. Pl. IX.) is a representation of the back of a blue iris thus treated. These serpentine vessels have been described as radiating fibres converging from the circumference towards the centre, and the dilatation of the pupil attributed to this contraction*. That they are vessels, however, a successful injection, I think, proves, the whole of them becoming filled with the colouring matter, as may be seen (in Fig. 4. Pl. IX). To the size and direction of these vessels I wish to call particular attention, in order that their appearance may be contrasted with that of the front of the iris, which has been considered dependent on their distribution.

In order to obtain a correct view of the posterior surface of the iris, a transverse vertical section of the eye should be made at the distance of about an

* Maunoir, sur la Structure de l'Iris.

eighth of an inch behind the cornea, and the lens and portion of vitreous humor attached to it removed: the iris now appears covered by a thick layer of black pigment, marked by a number of converging lines; these lines, on close inspection, are found to be channels or hollows, as if resulting from a puckering or folding of the membrane. The pigment is secured from being detached and diffused in the aqueous humour by a fine transparent membrane which is closely attached to the margin of the pupil, from whence it is continued over the back of the iris, and anterior extremities of the ciliary processes, to the circumference of the lens, over the front of the capsule of which it is also probably extended, if it is, as may be supposed, the membrane of the aqueous humour. This delicate tissue may be turned down by the point of a needle; as it is connected to the iris by loose cellular structure only, in the interstices of which the black pigment is deposited. It is at first black, but, by gentle agitation in water, the colouring matter is removed, and the membrane remains transparent. Fig. 3. Pl. IX. is a drawing taken from a preparation, where the membrane was merely turned down without being freed from the pigment. When the membrane and pigment have been removed, the back of the iris appears free from colour, and marked by a number of delicate elevated folds, converging from the ciliary processes to within a short distance of the pupil; they are permanent and essential, and seem of the same nature as the

ciliary processes. The pupil is immediately surrounded by a well-defined distinct circle, about the twentieth part of an inch in diameter, of a denser structure than the rest of the iris; this is what has long been described as the orbicular muscle or constrictor of the pupil. If the iris be treated as I before mentioned, by maceration and extension, this appearance still preserves its integrity, and retains its original character (see Fig. 2. Pl. IX).

From the foregoing observations, I conclude that, if experiment leads to the inference that the iris is a muscular body capable of dilatation and contraction, its anatomical structure strengthens the conclusion; and that this muscular power more probably resides in this remarkable structure in front, than in the radiating fibres (as they have been called) behind. The arguments which have been advanced in favour of a dilating power in the radiating *striæ*, apply equally to this fasciculated structure of the anterior surface.

On the Membrana Pupillaris.

The *membrana pupillaris* is generally supposed to disappear about the seventh month of fœtal life. I shall endeavour to show that this occurrence does not take place until about the period of birth, as should, indeed, have been previously supposed. If the eye be examined about the fifth month, the

membrana pupillaris is found in great perfection, extended across a very large pupil; the vessels presenting that singular looped arrangement (with a small irregular transparent portion in the centre) so well depicted by Wrisberg, Blumenbach, Albinus, Söemmerring, Cloquet, and others. About the sixth month, it is equally perfect; the pupil is, however, smaller, the iris being more developed. Fig. *5.* Pl. IX. is a very faithful drawing from a specimen at this period. Subsequently to this date, the vessels begin to diminish in size and number, and a larger transparent portion occupies the centre. At the approach of the eighth month, a few vessels cross the pupil, or ramify through the membrane at a short distance from the margin; without at all presenting the looped appearance of the previous period, but admitting a free communication between the vessels of the opposite sides of the iris (see Fig. 6. Pl. IX). The pupil is now still more diminished in size, and the iris has assumed its characteristic coloured appearance; notwithstanding the absence of vessels, the membrane still preserves its integrity, though perfectly transparent. The period now approaches when it is to disappear; this occurrence takes place, according to my observations, a short time previous or subsequent to birth. In every instance where I have made the examination, I have found the membrana pupillaris existing in a greater or less degree of perfection in the new-born infant; frequently perfect without the smallest breach, sometimes presenting ragged apertures in

several places, and, in other instances, nothing existing but a remnant hanging across the pupil like a cobweb. I have even succeeded in injecting a single vessel in the *membrana pupillaris* of the ninth month, from which preparation Fig. 7. Pl. IX. has been drawn. Where I have examined it, in subjects who have lived for a week or fortnight after birth, as proved by the umbilicus being healed, I have uniformly found a few shreds still remaining. Fig. 8. Pl. IX. is taken from a preparation obtained from such a subject. It is obvious, from the preceding observations, that the membrane does not disappear by a rent taking place in the centre and retraction of the vessels to the iris, as supposed by Blumenbach, but that it at first loses its vascularity, then becomes exceedingly thin and delicate, and is finally absorbed. The demonstration of what I have advanced respecting this delicate part, is attended with much difficulty, and requires great patience. The display of the *membrana pupillaris* of the seventh month is comparatively easy; but at the ninth month, or subsequently, it can only be accomplished by particular management. The eye, together with the appendages, should be carefully removed from the head; it should then be freed from all extraneous parts by the scissors under water, and a careful section made at a short distance behind the cornea; taking care to include the vitreous humour in the division, in order that the lens may remain in its proper situation. The portion to be examined should now be removed into a

shallow vessel of water, to the bottom of which a piece of wax has been secured. The operator should be provided with fine dissecting forceps, and needles in light handles; with one needle he should pin the sclerotic down to the wax, and with the other raise the lens and portion of vitreous humour attached to it from the ciliary processes, and separate the ciliary ligament from the sclerotic. He may now expect to discover the membrana pupillaris, but its perfect transparency renders it completely invisible; he may, however, ascertain its existence, by taking a minute particle of the retina and dropping it into the centre of the pupil, where it remains suspended if this membrane exist. The preparation should now be taken up in a watch glass, and placed in a weak mixture of spirit and water, and a little powdered alum, raised on the point of a needle, dropped upon it. After a day or two, it may be examined; and, if the membrane be present, it has become sufficiently opake to be visible, and may now be suspended in a bottle of very dilute spirit.

The drawings which accompany the present memoir, have been executed with great care and fidelity by Mr. John Jacob, of Waterford; they are good specimens of his success in the delineation of subjects requiring much care and dexterity.

Explanation of the Plates.

Plate IX. *Fig.* 1. A magnified view of the front of a hazel iris, which shewed the fasciculated structure particularly well. The projections and cords very prominent.

2. A blue iris after maceration and extension, shewing the vessels free from blood which have been described as radiating fibres; the orbicular ring of the pupil strongly marked.

3. Ciliary processes and back of the iris, the membrane of the aqueous humour turned down.

4. Iris of a child, injected, dried on talc, and preserved in spirit of turpentine.

5. Membrana pupillaris of the sixth month.

6. Membrana pupillaris of the eighth month.

7. Membrana pupillaris of the ninth month, with a single vessel injected; it presents several ragged apertures.

8. Membrana pupillaris ten days after birth, existing in the form of

a very delicate broken tissue resembling a cobweb.

Plate X. *Fig.* 1. Shews the *corona ciliaris* surrounding the lens after the black pigment had been washed away; this is the appearance which I have described under the title of ciliary processes of the vitreous humour.

2. The membrane which covers the retina in the human eye turned down, exposing the fold of Söemmerring before it had expanded and displayed the transparent point.

3. The same membrane turned off from the retina in the eye of the sheep.

ON

INJURIES OF THE PELVIS,

By JOSEPH SWAN, Esq.
OF LINCOLN.

COMMUNICATED BY
MR. EARLE.

Read July 8th, 1823.

CASE I.

MR. BEECHAM, about twenty-five years of age, fell from his horse, and fractured the right os pubis. There was no alteration in the appearance of the extremity, but there was a very distinct crepitus when pressure was made on the right side of the pelvis; and he could move the limb in a considerable degree. He was very faint for some time, and, indeed, I may mention, that there never was the least reaction in the system. He lost eight ounces of blood from the arm two hours after the accident, and the same quantity in the course of the evening. He made water about an hour before he fell, and I therefore hoped the bladder had not been injured; but about an hour and a half after the accident, on attempting to make water, nothing came from the penis but a few drops

of blood; he said he felt as if he had made water, and he then had a very painful sensation in the perineum, as if the water had escaped. He made the same attempt a short time after with the same sensations. On attempting to pass a catheter I could not succeed, for it always appeared to escape from the urethra on the injured side; but on the following morning, when the bladder was very much distended, and he was in great pain, on an attempt being made, the catheter slipped into the bladder, which was evacuated of much urine. He was much relieved, and the urine was allowed to pass off, as it was secreted. On the third day an incision was made through the integuments in the perineum, as there was a slight appearance of urine having been extravasated there. On the fourth day he became worse, and, in the evening, the symptoms were very distressing. He had vomiting and hiccup, which irritated the injured parts exceedingly. Opiates did no good, but the Seidlitz powders afforded him much relief. As the urine did not flow freely, the catheter was withdrawn; and whenever he had an inclination to make water, it was introduced; but it was always about half a minute before the urine flowed. After withdrawing the catheter, and using it in this manner, all the distressing symptoms disappeared, so that, on the fifth day, it was hoped he might recover; but on the evening of this day he began to wander a little in his conversation, and on the sixth he was almost constantly insensible; he appeared

to get much weaker, but he continued to the middle of the seventh.

Examination.

On opening the abdomen, every thing appeared natural except the liver, which was purple and enlarged. The peritoneum, stomach, and all the intestines appeared healthy, except the cæcum, which had blood extravasated between its peritoneal and muscular coats; and this appearance was found to extend as far as the arch of the colon. The kidneys and ureters were sound. The pubes were separated at the symphysis, and the body of the right bone was broken through; its ramus was also fractured just about the place where it joins the ramus of the ischium, so that a considerable portion was completely detached, and this was entirely denuded of its periosteum. Much blood and urine were extravasated amongst the muscles in the upper part of the thigh. Two inches of the urethra were completely torn away; the inside of the bladder had a healthy appearance.

When the urethra or bladder is wounded, and the bones of the pelvis at the same time are broken, it appears to me that there can be no chance for the recovery of the patient, unless an incision is immediately made to give a free discharge to the urine; for if any of it is detained, it must destroy

the bones, and prevent their union, or, at least, must give rise to extensive exfoliations. At the same time, any loose portions of bone should be removed, as it is most probable the urine will have prevented their re-union. Besides this, if possible, a catheter should be kept in the bladder, so that as little urine as possible may be in contact with the bones. I have said, loose portions of bone should be removed: but, as I did not know whether such an opinion was correct, especially if the fragments were not very small, I made the following experiment.

Experiment.

On the 26th of March, 1821, I divided the skin over the symphysis pubis in a rabbit, and laid bare the right testicle, which I turned aside to prevent its being injured. I then separated the origins of the muscles from the bone, and passed one blade of a pair of strong scissors behind the symphysis pubis, which I divided quite through, and afterwards cut out a portion of the right os pubis, about one-twelfth of an inch broad, in the direction of the symphysis. The edges of the wound in the skin were then brought together by one interrupted suture.

The animal appeared to recover very well; but its hind legs were ever after much separated.

It was killed on the 4th of May, 1822, when the divided portions of bone were found separated from each other full three quarters of an inch, and the space was filled up only by a strong membrane.

CASE II.

Elizabeth Newton, aged twenty-six, received an injury of the left hip on the 22d of July, 1821, in consequence of being overturned in a gig. I saw her on the following day, with Messrs. Sharpe and Smith, surgeons of Fulbeck. She did not complain of much pain when she lay still. She could raise herself in bed a very little. As she lay in bed, the knee and foot were turned outwards. On pressing on the ilium, and moving the limb at the same time, a crepitus could be felt; and though motion could be made in any direction, considerable pain was produced by it. She complained of pain near the pubes, and particularly when she made water. When out of bed the foot could be put flat on the floor; and when she was supported, standing with her heels close together, there was the least possible difference in the appearance of the nates. She could sit without much inconvenience when put in this position. The crepitus was best felt by pressing on the anterior and superior spinous process of the ilium with one hand, and the tuberosity of the ischium with the other. The fracture began about two inches from the an-

terior and superior spinous process of the ilium, and, as far as I could judge, extended into the acetabulum. The exact place of the fracture could be ascertained, as it produced an unevenness of the crista of the ilium, which remained ever after.

At first, leeches and evaporating lotions were used. A tight bandage was put round the pelvis, and the legs were tied together, so as to keep them even. As the foot still turned out a little, a long splint was placed, so as to reach from the ilium to the foot.

She got up a month after the accident. At first, she moved about on crutches, and then attempted to walk without them, and the use of the limb appeared to improve for some time. She returned to her situation, where she was continually moving about, and, for some time, did not appear to get better. She complained of a rocking sensation, as if the injured parts were loose, whenever she attempted to walk; and, as I was afraid some disease might be produced or kept up by exercise, as in the following case, I recommended her to rest. A short time after a broad leather girdle was made to buckle firmly round the pelvis, and she is now quite recovered.

When the pelvis has been shaken in a fall, a chronic inflammation of the ligaments is apt to be produced, especially in a scrofulous person; but

the same disease will come on without injury, as in the following case.

CASE III.

Mrs. H., about thirty-five years old, had complained, for a long time, of weakness of the lower extremities, and, as her health had become bad, she was desired to take as much exercise as possible in the open air, but under this management she became worse. When I saw her, she complained of pain in her hips, and felt as if they would break asunder whenever she attempted to walk. She walked with the greatest difficulty, and frequently in doing this, her limbs were so weak as to cause her to fall down.

She was kept in an absolute state of rest for many weeks, and took tonic medicines. Under this treatment, her general health began immediately to improve, and she got quite well.

CASE IV.

George Millson, æt. 24, was brought into the County Hospital on the 21st of August, 1822, about four, p. m. He was intoxicated, and the only answer which could be obtained from him, was that he was full of pain all over. Having ac-

cidentally observed a little blood on the bed, I was led to inquire from whence it proceeded. I found that it came from the penis, when I immediately suspected that the pelvis was fractured. On pressing the symphysis pubis with one hand, and the ischium with the other, a distinct crepitus could be felt. He could raise himself in bed, but could not stand. When pressure was made on both ilia at the same time, the pelvis did not appear firm. I afterwards learnt that a loaded waggon had passed over him.

As he was very outrageous, I did not think it safe to attempt to examine the urethra, I therefore waited until eight o'clock, when I passed a catheter into the bladder, but only a very small quantity of bloody urine came through it. I introduced a finger into the rectum, when I could distinctly perceive a rupture of the urethra, and it was only by raising the point of the catheter with my finger, that it could be made to enter the bladder. The perineum and scrotum, and the right thigh, had become much swelled, and, as I was certain urine escaped amongst the injured parts, and he could pass none by the penis, there appeared to be no other chance of saving his life than by making an incision in the perineum. This was done on the right side, and bloody urine immediately escaped. Before the operation, he was very faint and appeared to be dying, but soon after he became better.

22. Ten, a. m. He has had a tolerable night. Pulse 120. So much urine has passed by the wound that it ran quite through the bed to the floor. There is some tenderness of the lower part of the abdomen. The right thigh is less swelled, and the scrotum is quite settled. He feels hungry.

Eight, p. m. He complains of much pain in the abdomen, and is very restless. The pain comes on by fits like the colic, and he passes air continually both by the mouth and anus. Pulse 126. The whole abdomen is tense and very tender, especially over the bladder. Eight ounces of blood were taken from the arm, and, as he had not had a stool since the accident, a common aperient mixture was ordered.

23. Ten, a. m. The tension of the abdomen is less, and he is much easier. He has had a purging stool. Pulse 126. The right thigh feels hard. He has had a restless night, but is now more composed.

Eight, p. m. Pulse 126. The abdomen is quite easy, and he can bear pressure over the bladder. He has purged more, and had a great discharge of urine. He felthungry, and wished for bread and milk. He has had some sleep. He is still thirsty.

23. Ten, a. m. Pulse 132. His tongue is furred and rather brown. He has had a very restless

night. His appetite is good. A proper quantity of urine has been discharged.

Eight, p. m. Pulse 120. He appears quite easy, but has some difficulty of breathing. The abdomen is tense. His appetite is good, and he has not much thirst. He has no pain except in the right thigh.

24. He died at one, a. m.

Examination.

On opening the abdomen nine hours after death, the peritoneum was sound, but blood had been effused behind it as high as the superior parts of the kidneys. A very small quantity of serum was in the abdomen, otherwise every part, covered by the peritoneum, was perfectly healthy. The arch of the pubes was quite broken off, and was only kept in its place by Poupart's ligaments. Several other portions, both of the bones of the pubes and ischium, were broken off. The acetabulum of the right side was opened, and matter was contained in it. The mischief was the greatest on the right side. The right sacro-iliac symphysis was fractured. Blood and urine had escaped to the lower part of the thigh, especially about the sciatic nerve. A very large rent was found in the anterior part of the bladder; the urethra was torn completely through.

The wound in the perineum looked very well, and no sloughing had taken place in any of the injured parts.

Had the fracture been confined to one side, there is every probability that it would have re-united, as the fractured portions of bone appeared as if the restorative process had begun in them.

ACCOUNT

OF

A CASE OF AXILLARY ANEURISM;

IN WHICH

THE OPERATION OF TYING THE SUBCLAVIAN ARTERY WAS SUCCESSFULLY PERFORMED.

By HARRY LEAKE GIBBS, M.D.,

MEMBER OF THE ROYAL COLLEGE OF SURGEONS, IN LONDON.

COMMUNICATED BY

B. C. BRODIE, Esq.

Read July 8, 1823.

IWAN NIKITIN, æt. 35, a cooper, in the service of the Imperial Russian Marine, was received at the General Naval Hospital of St. Petersburg during the last week of November, 1822, labouring under aneurism of the upper part of the axillary artery, or, more properly speaking, of the lower part of the left subclavian artery, the effect of a blow from a rope, in the act of throwing some kegs over his shoulder, a month previous to admission. At this time the tumor was about the size of a walnut, elevating the pectoral muscle towards the shoulder. As the patient was plethoric and muscular, four

venesections followed. Cathartics were employed during each week of his stay in the hospital, previous to the operation, together with an extremely low diet, and the use, for a fortnight, of the tinct. digitalis. By these means the circulation was much abated; but, as the tumor gradually increased to the size nearly of a goose's egg, causing pain in the arm and general restlessness, it was determined to attempt the operation. This I did on the 5th of January, 1823, in the presence of Drs. Leighton, Hieroth, Hassing, &c., the medical gentlemen of the Naval Hospital, and a vast number of spectators. I have particularly to thank Dr. Arendt, Chief of the Artillery Hospital, for his very able assistance, both during and after the operation.

January 5th, 1823.—The patient being placed on a table, with his head towards the light, inclining backwards towards the right shoulder, the integuments above the clavicle were pinched, or drawn up, and being pierced with a straight bistoury, presented an incision of three inches in length, parallel to, and a quarter of an inch above, the clavicle. The platysma myoides was thus divided, and the external jugular avoided. This vein causing embarrassment, from its alternate swelling and collapse, I enlarged the incision an inch inwards, and, passing a director under the clavicular portion of the steno cleido mastoideus muscle, close to the clavicle, separated it from its attach-

ments. Its contraction afforded tolerable space, and by means of the finger, the subclavian artery, as it passes over the first rib, was felt, but very faintly, from the state of syncope into which the patient had nearly fallen, at the same time that he had a severe rigor. I delayed the operation ten minutes, covering the poor man with blankets, and giving him cordials. At the expiration of this time, the pulse of the artery had recovered itself, and being separated by the nail and finger from the connecting parts, a round ligature was passed under it, by means of a stout silver needle (much curved), and fitted to a strong handle: the instrument being passed under the vessel first, the ligature was passed through the eye, and drawn under. I instantly raised the vessel, and finding that the pulsation of the tumor was thereby stopped, tied it in a double knot, as it passes over the first rib. The wound was then brought together with adhesive plaster, the patient dressed and put to bed. I must own the operation was tedious; but having succeeded in tying the artery, my hopes of final success were sanguine. A bottle of warm water was kept under the hand, and the left arm enveloped in, or surrounded by, a pillow-case filled with warm bran, and renewed as required. In the evening I gave him seventy drops of tincture of opium, as he complained of pain towards the shoulder.—*Second day.* Slept towards morning. Pain ceased. Veins on the back of the left hand slightly distended. Pulse getting

plains of cough. Empl. Vesicat. Lyttæ inter scapulas, and ordered an emulsion.—*Twelfth day.* Ligature came away readily. Pulse 70. Felt also at the left wrist; but very weak. Wound united at the extremities.—*Fourteenth day.* Cough better. Pulsation in the left brachial and radial arteries not so perceptible as before.—*Sixteenth day.* Wound healing fast. Cough ceased. Left arm well nourished; but the pulsation at the wrist not always to be felt.—*Eighteenth day.* Tumor quite flat, and under the pectoral muscle. Walked a little to-day. Pulse 68.—*Nineteenth day.* Going on well. Wound nearly healed. Pulsation in the left brachial and radial arteries not to be felt.—*Twenty-first day, January 26th.* Found him walking about. The wound healed, except a very small spot in the centre, from which a little lymph has oozed for some days. Arm warm, surrounded only with flannel. Has some strength in the fingers. Pulsation not perceptible, but the arm well nourished. Appetite and sleep good, and likely soon to be completely cured.

The arm and upper part of the shoulder must have been nourished, in the first place, by anastomosing vessels coming from the neck and right scapula; but *especially from the extreme branches of the left epigastric inosculating with those of the left mammaria externa,* by which the blood at first was returned to the axillary artery below the tumor,

and so onwards. But I conceive that as the anastomosing or collateral arterial branches of the shoulder and arm generally began to dilate, the blood found a readier course by them, in preference to the old channel. If this be true, the cessation of pulsation in the brachial, radial, and ulnar arteries is accounted for, as well as the nourishment of the arm.

RUPTURE OF THE UTERUS,

AND

SUBSEQUENT RECOVERY OF THE PATIENT.

By JAMES POWELL, Esq.

Read July 8, 1823.

I HAVE the honour of laying before the Society the following case of rupture of the uterus, and subsequent recovery of the patient, as the facts connected with it cannot fail to be interesting.

Ann Dance, aged 24, a patient in the parochial infirmary of St. Clement Danes, of low stature and considerable deformity of the bones of the limbs, and advanced to the full period of her first pregnancy, experienced some slight uterine pains on the evening of Monday, October 7, 1822. These pains continued lingering, with but little dilatation of the orifice of the uterus, until six o'clock on Thursday evening; at which time I found, upon examination, that the orifice of the uterus was dilated to the size of a crown piece, and that the head of the child presented.—Soon after this visit, very strong bearing down pains came on, which

continued with increasing urgency until about eight o'clock, when, according to the report of the midwife, (who had the patient under her immediate charge), these bearing pains suddenly and totally ceasing, were succeeded by an immediate, and a most excruciating pain of a different kind. This important change in the character of the labour, expressed, as it soon became, by great anxiety of countenance, and other indications of extreme distress, occasioned much alarm amongst the attendants, and my assistant, in consequence of my unavoidable absence from town, was requested forthwith to see the patient. That gentleman, in consideration of the intensity and permanence of the pain, was induced to have recourse to bleeding, and afterwards to administer an opiate.—At this time there was neither hemorrhage nor sickness present. On my return to town, about 11 o'clock, on the following day (Friday), I was convinced from her peculiarly distressed and anxious countenance, which forcibly struck me on entering her chamber, that something very serious had occurred in her case.—The abdomen presented, upon the whole, an uniform surface, similar to what it usually does in advanced pregnancy. On examination, per vaginam, however, I found that the head, which had before presented, as well as every other part of the child, had receded entirely beyond my reach. Presuming from the above circumstances, that rupture of the uterus had taken place, I concluded that instant delivery was the appropriate

treatment, and I therefore lost no time in procuring the attendance of two or three of my professional brethren to sanction my decision. On the arrival of my friend Doctor Davis, about one o'clock, it was immediately determined to deliver the patient, that gentleman in the presence of Mr. Wray, Mr, Radnor, and myself, undertaking the operation.

The limbs of the child could not be felt through the abdominal parietes, as usually happens in these cases : but it was observed by Doctor Davis, before the commencement of the operation, that the tumid abdomen presented two prominences, which, upon the introduction of the hand, he found were occasioned by the apposition of the back and head of the child to it: the latter forming the inferior tumor, immediately above the brim of the pelvis, and the curved smooth back, the other—the hands and feet were folded as in ordinary cases, in front of the child, and, therefore, were of course directed towards the back of the mother. Doctor Davis ascertained that the rupture extended along the whole course of the neck of the womb, on the right side, including its orifice. He also reported, when his hand was in the cavity of the abdomen, that he felt the body of the uterus much contracted, and occupying posteriorly, towards the left side, the space immediately above the brim of the pelvis.—The delivery was effected by turning. The confinement of the pelvis at the brim (although not considerable) was such as to require the ope-

ration of craniotomy, before the extraction of the head could be accomplished. So much was the strength of the patient exhausted at this time, that during the remainder of the operation, it became necessary to administer to her repeated table spoonsful of undiluted brandy to keep her in actual existence. The placenta, having been previously thrown off from the uterine surface, was found in the vagina, immediately after the removal of the child, and withdrawn by the application of the slightest traction. No hemorrhage, nor descent of any portion of intestine succeeded to this result. A full dose (60 minims) of Battley's Liquor Opii sedativus was immediately exhibited, and the same anodyne, in a smaller dose, was repeated at bed-time. On the following morning (the 12th) she was not only alive, contrary to the expectation of all the gentlemen who had witnessed her deplorable condition on the preceding day, but she was in many respects positively better: and although she had not absolutely slept during any part of the night, she had enjoyed a considerable degree of tranquillity. The pulse was 160. The abdomen was tense, and extremely tender to the touch; the countenance was improved, but still anxious; the discharge from the vagina was sufficient, but of a dark grumous character. She passed her urine readily, and in proper quantity. The breathing was excessively laborious, and oppressed. Eight leeches were applied to the abdomen, and the bowels were opened by an enema. In the even-

ing a full dose of opium was administered, and as soon as the wounds from the leeches had ceased to bleed, a large blister was applied to the hypogastrium. The same state of symptoms continued for several days; the abdomen, however, becoming gradually less tense and less painful upon motion. After an interval of about eight days, pieces of organised structure, sloughy in their appearance, and very offensive from their putridity, escaped from the vagina. After this the uterine discharge assumed the character of laudable and healthy purulent matter. This new form of discharge continued for many days, but without being accompanied with any decided remission of the alarming symptoms; the excessive frequency of the pulse, the laborious respiration, the soreness of the abdomen, and the cough remaining unabated. The patient, however, began at this time to relish food, and she was allowed to indulge sparingly in the use of a light and nutrient diet, including a small portion, once daily, of animal food. The purulent discharge having ceased, a healthy evacuation of the lochia followed. But this second change did not appear decisive of the patient's fate, inasmuch as several of her most urgent symptoms, such as extreme difficulty of breathing, incessant and violent coughing, and great pain of the hypogastrium upon attempting to change her position, continued greatly to harass her. In the midst of these unpromising circumstances, a large quantity of purulent matter was thrown up from

the chest, in the midst of a fit of coughing, which had the effect of greatly relieving her most distressing symptoms. She continued to expectorate purulent matter for several days afterwards. Mild tonics, and a generous diet, with wine, which at this time were recommended, appeared to contribute importantly towards saving her life. Such, indeed, was her state of extreme exhaustion, until the purulent expectoration had completely ceased, that the exhibition of wine, in very frequent doses, was considered of indispensable necessity. When upon one occasion, from an idea that by its use the pulmonary affection was aggravated, the wine was partially discontinued, the symptoms of exhaustion became so suddenly formidable, as to compel an immediate return to its administration in the former quantities*. From this time her health gradually improved, and medicines were discontinued upon the 3d of December. About the middle of the same month, she was discharged from the infirmary, quite well, without pain or cough, or any other affection. I have seen her several times since that period, and upon one occasion she complained of considerable tenderness of the lower part of the abdomen, which yielded to a moderate bleeding, and other appropriate treatment, and at present I believe she is perfectly free from disease.

* The wine used upon this occasion was Sherry, and the quantity exhibited for many days was a wine glass full every three or four hours.

ILLUSTRATIONS

OF THE

MEDICAL PROPERTIES OF QUININA.

By JOHN ELLIOTSON, M.D.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS, AND OF THE CAMBRIDGE PHILOSOPHICAL SOCIETY, AND PHYSICIAN TO ST. THOMAS'S HOSPITAL.

Read July 8, 1823.

AMONG the energetic substances which the industry and sagacity of continental chemists have extracted from various articles of the Materia Medica, and upon which the peculiar properties of these appear to depend, none have hitherto been turned to any medical purpose in their separate state, I believe, except the Hydrocyanic Acid, Iodine, Morphina, Emetina, and some of those which are furnished by Cinchona. An account of the properties of Strychnina, Veratrina, Hyoscyamina, and other alkaline substances procured from vegetable narcotics, is to be found, not in works upon the practice of medicine, but in Orfila's Treatise upon Poisons, or in similar writings of experimental physiologists. The Hydrocyanic Acid

has been investigated as a medicine both here and abroad, and deserves a place in our Pharmacopœia, although destitute of the high pretensions which were at first injudiciously proclaimed. Of the powers of Iodine in bronchocele, we have abundant testimony: I have seen sufficient to satisfy myself, and they would seem equally great in certain other structural diseases*. Very little has been written upon the medical virtues of Morphina, but it is much employed, in combination with acetic acid, by some eminent physicians, instead of opium; and both it and Emetina, as well as the Hydrocyanic Acid, have a place in the *Codex Medicamentarius* of Paris. The curative powers of Quinina have been highly extolled in French publications, but I am not aware that any thing has appeared in this country upon the subject, and it is for the purpose of beginning to supply this deficiency, that I do myself the honour of offering the present communication to the Society.

Of the three substances discovered in Cinchona†,—the alcali Quinina, found in Cinchona Cordifolia, and more abundantly in the Oblongifolia,—the alcali Cinchonina‡, found in Cinchona

* Some valuable cases of the successful exhibition of the hydriodate of potassa are related by Dr. Baron of Gloucester, in his "*Illustrations of the Inquiry into Tuberculous Diseases.*"

† Pelletier and Caventou, *Journal de Pharmacie.* Fevrier. 1821.

‡ All the additional alcaline bodies have so lately come to light, that their names are not yet settled. The French terminate their appellations in *ine*; ex. gr. *morphine, brucine, strychnine*; but, for

Lancifolia and also more abundantly in the Oblongifolia*,—and the Kinic Acid, found in combination with lime in all three species and also with Quinina in the Cordifolia, with Cinchonina in the Lancifolia, and with both Quinina and Cinchonina in the Oblongifolia; the two alcalies only, if I mistake not, have been tried as remedies, and of them the Cinchonina appears to have been but once exhibited†.

the sake of uniformity with the names of the old alcalies, the final should be *a*, and it seems to me most eligible to adopt the French appellations with the change of the final *e* into *a*; ex. gr. *morphina, brucina, strychnina.* Some have proposed to designate *quinina,* quina or kina: but the latter at least is too similar to the word kino, and would besides lead any one to suppose the substance it denotes must be the basis of kinic acid,—another instance, I may remark, of objectionable nomenclature, from the circumstance of a very different article being termed kino. *Cinchonina* is by some called cinchonia, but the word is evidently too similar to cinchona; and the same observation applies to the word hyoscyama, which would be easily mistaken for hyoscyamus; and the objection must be still stronger if the alkalies *cinchonina* and *hyoscyamina* should ever be prescribed. The uniform termination in *ina* would be very distinctive.

* A chemist, therefore, would suppose the red bark the best. It is preferred by Dr. Chapman, Professor of Materia Medica at New York (*Discourses on the Elements of Therapeutics*); the late Dr. Saunders of Guy's Hospital wrote expressly to prove its superiority, and collected a large body of most respectable evidence (*Observations on the superior efficacy of the Red Peruvian Bark, in the cure of Fevers,* &c.); Dr. Rigby of Norwich (*An Essay on the use of the Red Peruvian Bark in the cure of Intermittents*); and Dr. Skeete (*Experiments and Observations on Quilled and Red Peruvian Bark*), followed in support of the [illegible].

† Dr. Chomel once prescribed t[illegible] in in-

The Quinina, in the state of sulphate, is very extensively employed in France, and many relations of its efficacy have been published in the journals of that country. As soon as the two alcalies of Cinchona were discovered, M. Pelletier sent a quantity to Dr. Magendie, who administered them to dogs in large doses without nausea, vomiting, or other apparent result. The indefatigable and acute physiologist then injected into the veins of these animals from two to ten grains of the sulphate and of the acetate of Quinina and Cinchonina in solution, but with no more effect. Satisfied of the innocence of the substances, he ordered the sulphate of quinina to several scrofulous children affected with ulcers, and in a fortnight the most decided benefit was obtained. One child, in particular, he mentions, four years of age, who had scarcely been able to move for ten months, was constantly crying and ate nothing; but at the end of six weeks, after taking two grains of the sulphate daily, it acquired a good appetite, became cheerful, walked well, and would not readily have been recognised. In the same paper he states that a phthisical patient derived considerable benefit from the medicine*.

M. Pelletier furnished Dr. Chomel, also of La Charité, with a large quantity of the sulphates, and the following was the result of the exhibi-

termittent fever. Six grains mitigated the paroxysms; twenty put a stop to them. *Journal de Pharmacie.* Mars. 1821. p. 137.

* l. c. p. 138 sq.

tion of the sulphate of Quinina in thirteen cases of intermittent fever. Ten were cured; five by the first doses, five by the second: in two the paroxysms were merely mitigated, and in one no sensible effect was produced. In the three unsuccessful cases, the Cinchona itself equally failed. The medicine was taken dissolved in water, on an empty stomach, before the accession of the paroxysm, and the whole quantity was generally six or eight grains, but twice this amount when necessary*.

In September and October, 1820, M. Double tried the sulphate of Quinina in six cases of intermittent fever. In the first, the disease never returned after the exhibition of three grains three times in the interval; smaller doses were subsequently continued for some time. In the second, which occurred in a child, one grain night and morning retarded and deranged the course of the first paroxysm, and a second never took place: the medicine was given for some days in gradually diminished doses, and the patient recovered her strength and a healthy state of her digestive organs. The third case occurred in a young female, and was cured with two grains night and morning. The fever, which was quotidian, instantly lost its intensity and ceased after the third day, and the patient's health improved in a way that could not have been expected. The fourth was a tertian.

* l. c. p. 134 sqq.

Four grains were taken twice in the interval; the next paroxysm was of the slightest description, and no other was experienced: the medicine was continued some time.

The fifth and sixth cases were equally decisive. M. Double prescribed it in a variety of diseases, which are usually treated with Cinchona; and for the most part, he says, with satisfactory results.

Instances of the equally successful exhibition of the sulphate of Quinina, by MM. Villermé*, Magendie†, Fallot‡, and Dupré §, are also recorded.

M. Piedagnel has published a case of violent periodic pain of the supra-orbitar nerve entirely cured by the administration of ten grains of the sulphate, during one of the daily intermissions, and a repetition of the same doses in the following twelve hours with the view of greater security‖. M. Dupré relates a case of violent periodic pain of the infra-orbitar nerve, that subsided after the exhibition of twenty-four grains in small doses during two intermissions; and one of remittent sciatica which yielded very speedily¶. Two instances of periodic

* *Bulletin de la Société Médicale d'Emulation de Paris.* Janvier. 1821.

† *Journal de Physiologie Expérimentale.* Octobre. 1821.

‡ *Journal Complémentaire du Dictionnaire des Sciences Medicales.* Mai. 1822.

§ *Journal de Phys. Exp.* Août. 1822.

‖ l. c. Avril. 1822. ¶ l. c. Août. 1822.

pain of the facial nerve treated with equal success by M. Ribes, will be found in the same pages. M. Dupré gives us a case likewise of Typhus, in which a rapid amendment took place after the use of the sulphate of Quinina was commenced.

I do not know that any thing more has been recorded respecting the powers of this remedy; but, from the activity which prevails throughout the profession, and from the number of journals which are published, it is not unlikely that some statements have escaped my notice.

In the common run of cases in which we prescribe Cinchona, its efficacy is not particularly striking, as we generally employ at the same time nutritious food, wine, perhaps, and porter, and every thing calculated to strengthen. But in these cases I have always been equally satisfied with the sulphate of Quinina. I ordered it largely and perseveringly in one case of irregularly intermittent and in one of remittent pain of the face, but without advantage. Like M. Dupré I employed it in a case of typhus, and with eminent advantage. A poor Irish-woman, half-starved and flooding, was brought into St. Thomas's labouring under severe typhus, on the 19th of June. She was supported by plenty of beef-tea and milk; the epigastrium, forehead, and occiput were blistered; and Hyd.

cum Creta was prescribed in doses of ℈i, and sometimes ℈ij every six hour still the mouth grew sore. The delirium and stupor were entirely subdued, and the tongue became clean and moist, but the debility increased hourly. The face became ghastly, and the body sunk lower in the bed. I ordered three, and soon five grains of the Sulphate of Quinina, to be given every six hours, and the diet to remain as before. A striking amendment was observed the next day, and she speedily recovered. After being convalescent some time, the medicine was omitted; but, when I thought of discharging her, she suddenly relapsed into extreme prostration of strength, passed her urine and fæces again involuntarily, and grew delirious; but the tongue remained clean and moist. The two blisters to the head were repeated, and the sulphate ordered as before, milk and beef tea *ad libitum* continuing to be her diet. The amendment was not so sudden, but from the first day of recurring to the medicine, the debility ceased to increase; in a few days she clearly gained strength, and was soon convalescent. After taking the full diet of the house, and a pint of porter daily for two or three weeks, she was discharged perfectly strong and well*.

I may add, that, although in doses of five grains

* This case has been added since the paper was read to the Society.

every six hours, I have never observed any disturbance of the functions, a dose of ten grains occasioned vomiting in the three only instances in which the medicine was carried to this extent from its not strengthening the patients in ordinary doses.

The three following are all the cases of intermittent fever in which I have prescribed it, and they corroborate the assertions of the French. They occurred in St. Thomas's Hospital, as well as the rest which I shall detail. The medicine was given in the form of pills.

1. Elizabeth Taylor came under my care, as an out-patient, on the 19th September last.

She had laboured under intermittent fever nearly a twelvemonth, in Gloucestershire, when thirteen years of age, and had since experienced a solitary paroxysm occasionally, and once so severe a return, as to confine her two months in St. Thomas's Hospital. The disease had now regularly recurred in the quartan type for six months.

I prescribed gr. v. of the sulphate of Quinina every six hours. On the tenth day (Sept. 28), I saw her again, and learnt that a paroxysm took place on the first regular day, viz. the 21st of the month, but without any cold stage; that the hot stage was very mild, and that the disease had not

subsequently returned. The same prescription was continued.

On the 18th day (Oct. 6th), she informed me, that there still had been no return, and I continued the prescription. She never applied again, remaining, no doubt, perfectly well.

2. The second case was that of an Irishman, named Hugh Kaney, who was admitted into the hospital on the 27th March.

He had laboured under tertian for five days. I prescribed gr. v. of the sulphate of Quinina every six hours.

A paroxysm took place on the day after his admission; but although he remained in the hospital till the 8th May, he never experienced another. The medicine was continued, and in the same quantity, till the 22d April.

3. The third case proved more refractory, but the disease was instantly influenced by the medicine, and removed in little more than a fortnight*.

* I have reason to believe, that the medicine which this man took was unavoidably not obtained from the usual source, and was of inferior quality. It should be intensely bitter, as white as snow, and extremely light, resembling benzoic acid in its appearance.

Robert Tindall was admitted into the hospital on the 27th March, having laboured under tertian for a month.

I prescribed gr. v. of the sulphate of Quinina every six hours. On the 6th day (April 1), I found that the paroxysms had returned regularly, but less severely, and at a later hour. On the 10th (April 5), that they were still milder, and on the 13th (April 8), that they had become much milder. On the 15th (April 10), the paroxysm was severer than it had lately been; but on the 19th (April 14), it returned very mildly, and for the last time.

The same quantity of the medicine was continued till the 26th day (April 22), and he left the hospital on the 49th (May 15), without the least return of the disorder.

The virtue of the medicine evidently resided in the Quinina, and this, if not rendered perfectly pure, could be afforded at a much smaller price than the sulphate. I, therefore, determined on trying the Quinina itself, and the following cases of its exhibition in intermittent fever prove its efficacy. I trust they will be acceptable to the Society, as I have been unable to find an account of the exhibition of simple Quinina in any disease*. Like the sulphate, it was given in pills.

* The article was prepared for my use by digesting cinchona

The history of some of these cases is not sufficiently extensive to *prove* the curative powers of the remedy, but they are related with the rest, because I wish to lay before the Society the *whole* of my experience of it in intermittent fever; and, as far as they go, they all show its power. Not one presents the shadow of an exception. That failures will occur, is, however, nearly certain. For no remedy is so specific but that the previous removal or diminution of some morbid, or at least unfavourable, condition may be requisite to its success, and this is particularly exemplified in intermittent fever.

1. I first prescribed the Quinina, on the 29th November, for a woman named Martha Pallow, who had been affected with quotidian for a fortnight, the paroxysms commencing always at four o'clock, a. m.

Five grains every six hours were ordered.

in a very dilute solution of sulphuric acid (ʒij. to four gallons of water), straining, and then adding magnesia to saturation, by which means the Quinina was precipitated from the acid, mixed with tannin and extractive matter, and sulphate of magnesia remained in solution. The precipitate was again dissolved in sulphuric acid, again precipitated, and finally washed and dried. A pound of cinchona cordifolia furnishes about an ounce of this impure Quinina, or about two drachms of pure sulphate of Quinina by another process, in which the Quinina is obtained pure, by means of alcohol previously to its formation into a sulphate, whence the greater real expence of this article.

She visited me again December 7, the next day for seeing out-patients, and said she had experienced no paroxysm since the 7th day (Dec. 4). The medicine was continued, and in the same doses, but she never applied again, and therefore, probably remained in good health.

2. William Johnson was admitted into the hospital January 23, having laboured under tertian for ten weeks.

He was ordered the same doses at the same intervals. A paroxysm occurred on the day of his admission, but more mildly than before, and he had no other up to the 5th day (Jan. 27), when he left the house of his own accord.

3. William Johnson was admitted on the 23d January, ill ten weeks with tertian.

The same prescription.

He had a paroxysm the day after his admission, but more slightly than before; and on the 6th day (January 28), he voluntarily left the hospital without having suffered another.

4. Edward Capon had tertian in Norfolk twelve years ago: was now a surgical patient in the hospital, and desired my assistance on the 4th Febru-

ary, on account of a quotidian which had existed three weeks.

The same prescription.

On the fifth day (February 4), I found that he had experienced no paroxysm, but merely a coldness of the loins, legs, and feet at the customary time of the paroxysm.

On the eighth day (February 11), he said that even the coldness had ceased to take place, and up to the 1st of May, he remained free from the disease.

5. Francis Douglas had been afflicted with intermittent fever irregularly for eighteen months: at first daily for six weeks in the West Indies. Since that time he had made a voyage to China, and for five months had no paroxysm.

One attacked him on the 2d of February last in the morning; one on the 6th, in the evening; and one on the 8th, at noon—the day on which I first prescribed for him.

He complained of a degree of shivering every day.

The same prescription was written for him.

He had no paroxysm from the day he commenced the use of the medicine till the eighth (February 15), and then none till the fourteenth (February 21).

No other occurred during his residence in the hospital.

6. Daniel Duff was admitted on the 13th February, having laboured under quotidian a fortnight.

The same prescription.

A paroxysm took place on the two first days after his admission, but they were slight, and the second slighter than the first; and up to the 27th of the month he had no return, and was then discharged.

7. Edward Perry, ill a month with tertian, was admitted February 13.

He had laboured under the disease in Wiltshire thirty-six years ago, but never since that period till the present time.

The same prescription.

The paroxysms at once became slighter, and recurred but twice after the use of the medicine.

8. John Ferguson, affected with tertian for three weeks, was admitted on the 8th March.

The same prescription.

No paroxysm took place after the use of the medicine was begun.

9. An old woman of the name of Traylen, had laboured under quartan for ten weeks. She had been subject to it for many years, but always stopped the paroxysms before by a smaller quantity of cinchona than had failed the last spring.

The same doses of Quinina were followed by an immediate cessation of the disease, and though three months have elapsed, it has not recurred.

10. Daniel Carthy was admitted May 29, on account of tertian. He had the same prescription as the rest. The only paroxysm that took place was on the day after his admission, and he was discharged at his own desire at the end of three weeks.

11. Bryan Summers was also admitted May 29, on account of a tertian, caught at Tilbury Fort. The same prescription was given to him. A paroxysm occurred immediately after his admission, but it was not succeeded by another. A chillness of the legs came on every other day for some little

time; but this gradually decreased, and he was discharged at the end of three weeks.

My general experience of simple Quinina, as a tonic, is the same as of the sulphate; but I have never observed derangement of the stomach induced by doses of the impure preparation I employed, so large as ten grains, given every six hours.

I beg not to be misunderstood as recommending simple Quinina in preference to the sulphate. My object is merely to illustrate the virtues of the substance whether simple or combined. I may here state that although none of my friends have yet employed simple Quinina, several have prescribed the sulphate, and all with the most satisfactory results. Every case of intermittent fever has presently yielded to it, and in some, the bark had previously failed*.

* Had there been sufficient time, it was my intention to collect these cases, and lay them, with the permission of my friends, before the Society. I regret my want of opportunity the less, because, as they were chiefly examples of intermittent fever, the narrations would all have been exactly similar to those which have been read: a patient would only have been said to have laboured under intermittent fever, to have taken the sulphate, and presently lost his disease. But the following case, furnished me by my friend and colleague, Dr. Roots, is exceedingly worthy of detail, as affording an instance of the immediate success of the sulphate, after the failure of both bark and arsenic.

"M. Sullivan was admitted into St. Pancras Infirmary on

It has been apprehended that the alkalies of cinchona may be analogous to those of narcotics,

May 7th, and had been suffering under tertian for nearly a month. She took the liquor arsenicalis from the 8th of May to the 23d, and every two or three days rhubarb and calomel, without any advantage. From the 23d of May to June 6th, she took cinchona in drachm doses every six hours, with the decoction and tincture, continuing at times the rhubarb and calomel. As the paroxysms still returned at the regular period, the cinchona was discontinued, and the liquor arsenicalis resumed in doses of ♏ ix, every six hours, which she took from the 6th of June till the 20th. On the 20th, finding the paroxysms still return at the usual period, I ordered her five grains of the sulphate of Quinina, in pill, to be given every six hours.

"She took twelve doses, never having any return of the paroxysm after the first dose, and was discharged on the 2d of July.

"It is right to mention, that the day prior to the sulphate of Quinina being ordered, she was allowed a pint of porter daily."

Dr. Roots, I may add, has employed the medicine but once besides, and says, in his letter to me, "In another case of quartan, the sulphate was given in doses of two grains every six hours, and was equally successful."

While correcting the press, I have witnessed the power of the sulphate in a fourth case of intermittent. A poor man, of the name of Charles Hunt, was conveyed to me on *Monday morning*, September 1, and, with difficulty, supported into the house. He said that he had laboured under ague at Cowes, in the Isle of Wight, twenty years ago, but was attacked a fortnight since with violent vomiting and pyrexia, for which, at the suggestion of some friend, he drank large quantities of cold water: that in a few days, a severe tertian commenced, without any alleviation of the other symptoms; and that he had experienced four paroxysms, every successive one invading an hour earlier, and each of the three stages lasting always nearly three hours. I found him excessively hot and thirsty, vomiting every thing

and their exhibition consequently not altogether free from danger. But the fear is groundless. I have used many ounces of both Quinina and its sulphate, have frequently given them every day for several weeks, and, even when the quantity of the sulphate or of the impure Quinina was a scruple in the twenty-four hours, have never observed the slightest unpleasant effect. Yet there can be no

he swallowed, with a feeble rapid pulse, and so weak as to have fallen three times that morning, in walking through a yard belonging to his house. Five grains of the sulphate every six hours, in the form of pill, were ordered. The medicine was not procured that day, and in the evening he had a paroxysm an hour earlier than the preceding, and more violent than any. The next day (*Tuesday*) he began its use, and on *Wednesday*, to his great delight, he experienced no paroxysm, but merely a chilliness for about ten minutes, followed by neither heat nor sweating. On *Friday*, I found him much stronger, much cooler, with little thirst, with his pulse greatly reduced, and able to retain every sort of food, —he had not vomited since the first dose of the remedy. I write this on *Monday*, September 8, and he tells me to-day, that he has had not the slightest paroxysm, and feels perfectly well; indeed he walked to my house, a distance of three miles, and purposed walking home again.

This case is particularly striking, not merely as an illustration of the immediate cure of the disease, but from the circumstance of the violent vomiting and pyrexia, which were constantly present and which would have deterred any one from exhibiting bark in the first instance, yielding completely to the remedy. I obtained the medicine for him at St. Thomas's Hospital, where the article we have at present is very beautiful. It seems to me more successfully manufactured than when I first employed it, and in describing its sensible qualities at page 552, I should have added that, if good, it cannot be afforded at a lower price than three guineas an ounce.

question that an excessive quantity of so intense a tonic and bitter may disturb. Accordingly ten grains of the sulphate at a dose occasioned vomiting, as I mentioned, in my own practice. An instance has been related to me of a gentleman experiencing nausea and head-ache from a dose of ten grains taken without advice; and another in which five grains repeated every three hours for six times, caused a degree of uneasiness; and Dr. Magendie says, that when practitioners have gone considerably beyond ten grains (dépassé de beaucoup cette dose) in the twenty-four hours, the patient has sometimes experienced a high degree of excitement, and of disturbance of the head *. But quantities that can disagree, are not required. five grains of the sulphate every six hours is the largest dose that can be necessary: many cases of intermittent fever have been cured with three, two, and even one grain, every six hours.

I would always continue the medicine, whether using the sulphate or simple Quinina, for about a week after the ague has ceased, because I have heard of relapses where it had been omitted immediately that the disease gave way.

It is very true that Quinina and Cinchonina cannot strictly be called new medicines, because they exist, one or both, in the Cinchona which we have

* *Formulaire pour la préparation et l'emploi de plusieurs nouveaux médicamens.* p. 49. Paris. 1822.

all been prescribing. We are in the situation of M. Jourdain, in Moliere's *Bourgeois Gentilhomme*, who had been speaking prose all his life without knowing it; and we might address the chemists, to whose labours we are so deeply indebted, in language similar to that of the worthy man, on receiving the information from his Maître de Philosophie.—" Par ma foi, il y a plus de quarante ans que je dis la prose, sans que j'en susse rien; et je vous suis le plus obligé du monde, de m'avoir appris cela."

But although we have not gained a new medicine, the acquisition of so compendious a form of bark, if one may so speak, is highly important. I have often smiled at the common application of the passage in the *Georgics*, where Virgil describes the effect of throwing a little dust upon bees engaged in battle, to the effect of bark upon intermittent fevers:—

> Hæc certamina tanta,
> Pulveris *exigui* jactu, compressa quiescunt.

The powder of bark requires generally to be *thrown in*, according to the apt expression of old practitioners, in pretty large quantities before the disease is removed, and not unfrequently it fails. But the quotation is strictly applicable to Quinina and its sulphate. The patient has only to take a pill, and is spared the annoyance of swallowing any

of the mass of inert powder* which remains after the extraction of Quinina, and which frequently, whatever may be the disease, so disgusts him, or so oppresses his stomach, and deranges his system at large, that bark cannot be borne in efficient quantity, or at all: and, what is particularly interesting, we find that they succeed when bark has failed,—that they cure cases of intermittent fever which have resisted bark, although perfectly well borne, and freely administered.

* After the extraction of the Quinina, the yellow bark is as tasteless as so much wet saw-dust; and I presume the same is the case with the pale, after the extraction of the Cinchonina, and with the red after the extraction of both.

CASE

OF

PRETERNATURAL GROWTH

IN THE

LINING MEMBRANE

COVERING THE TRUNKS OF THE VESSELS, PROCEEDING FROM THE ARCH OF THE AORTA.

By JOHN YELLOLY, M.D., F.R.S., &c.

Read July 8, 1823.

A MAN of 56, of a robust and healthful appearance, and of temperate habits, dropped down suddenly, when working in his garden in my neighbourhood, in the month of June, 1822. His fall was seen by some of his neighbours, who instantly went to his assistance, and found him motionless, in a state of complete insensibility, and without respiration. Not the smallest signs of life were afterwards exhibited.

He was represented by his widow and friends to have previously enjoyed very good health, and never to have made the smallest complaint of pain, or derangement of function. There was no tur-

ges nor lividity of countenance at the time
nor half an hour afterwards, when I saw

y after his death, the body was exa-
r. Cross, of Norwich, and myself, and
g appearances were noticed.

n of fluid was found between the
chnoid coat of the brain; a slight
as observed in the internal carotids;
er als were of more than their ordinary

art was rather larger than usual, and with
es remarkably tense and turgid, but parti-
cularly the left, which was exceedingly hard and resisting. During the operation of taking out the heart and large vessels, for facility of examination, the firmness of the left side was a little diminished, as if from a portion of the contained blood having escaped by the aortic opening.

The parietes of both ventricles were firm and thick, more especially those of the left. All the cavities were filled with blood, in a considerable degree coagulated. The coronary vessels, and the valves, were all of them healthy. The whole of the ascending aorta was somewhat increased in diameter, and its inner surface, in many places, covered with firm irregular scales of ossification.

The vessels which were transmitted from the arch of the aorta, exhibited remarkable and interesting appearances.

The trunk of the arteria innominata, and the trunks of the left carotid, and of the left subclavian arteries, were all of them in a considerable degree plugged up with a growth from the lining membrane of the artery, having the same general nature and appearance as the lining itself, and without any ossific deposition.

In the arteria innominata, this preternatural growth extended, irregularly, about an inch up the vessel, the calibre of which was reduced by it, to less than one-third of its usual dimension. In the left carotid, it was confined nearly to the opening of the trunk into the aorta; but the orifice was diminished to such an extent, as to admit not more than the passage of a common-sized probe.

In the left subclavian, it extended about half an inch up the vessel, the cavity of which it had diminished to the extent of a small slit. No other morbid appearances were observed.

It was a matter of much surprise to me, that with alterations of structure so considerable as those which I have described, no symptoms of previous indisposition should have manifested themselves. More particular inquiry, however, convinced me,

that this account was not altogether accurate; for though it was quite true, that the poor man's general health had always been good, yet he had experienced, within the last two years, two or three attacks of sudden faintness, from which however he soon recovered. The state of his pulse was not known.

The interruption to the passage of the blood in the vessels supplying the head and upper extremities, would necessarily require a greater effort on the part of the heart, to effect circulation through them; which would produce an augmentation of its parietes, and an increase of its muscular power: but what were the immediate circumstances which occasioned syncope and death, by giving rise (as I imagine took place in this case) to an interruption to the passage of blood to the sensorium, and therefore a suspension of the supply of nervous influence to the heart, it is not easy to determine.

I have not met with any record of a case similar to this; but the elevation into protuberances, of the inner membrane of arteries, in other situations, is mentioned by pathologists*.

A sketch of a portion of the arch of the aorta,

* Vide *Morgagni* de Sedibus et Causis Morborum, Epist. xviii., Art. 8; xxvi. 17; xxvii. 28; lxxiv. 5; and *Baillie*'s Series of Engravings to illustrate the Morbid Anatomy, Plate 14, fig. 3.

containing the arteries proceeding from it, accompanies this communication, and is engraved in

PLATE XI. Fig. 1.

EXTERNAL VIEW.

a. The arteria innominata, having a small opening at its upper part.

b. The left carotid, with a portion of wood thrust through the opening into it.

c. The left subclavian, having an opening like a slit on the left side, and a small hole extending a short way into the protuberance of the inner membrane, a little above it.

Fig. 2.

INTERNAL VIEW.

d. The opening into the arteria innominata from the aorta.

e. The opening into the left carotid, thrown a great deal to one side.

f. The opening into the left subclavian.

Patches of ossific matter are deposited irregularly over the inner surface of the aorta, around, but not immediately at, the openings of these arteries.

Carrow Abbey, Norwich,
July 7, 1823.

ABSTRACT OF THE HISTORY

OF

A CASE

OF

STRANGULATED EXOMPHALOS,

SUCCESSFULLY OPERATED ON,

FIFTY HOURS AFTER PARTURITION.

By Mr. GORE,

SURGEON.

COMMUNICATED

By Mr. TRAVERS.

Read July 8, 1823.

MRS. Clamp was delivered of a male child on the morning of the 20th of December. The author was sent for on the 21st, and found her suffering from a strangulated umbilical hernia. The operation was performed by Mr. Travers, about twenty-four hours after the protrusion; the gut was dark-coloured, apparently from venous congestion. The bowels were with difficulty affected after the operation, and the patient suffered much from pain in the abdomen. These symptoms yielded to bleeding and purging, and she appeared to be going on well. On the 26th, the wound was

dressed; some pus was discharged, and the omentum appeared sloughy. On the 28th, the discharge was very offensive, and the sloughing of the omentum was considerable. On the 29th, a large quantity of feculent matter came away through the wound. A compress of lint wetted with a solution of sulphate of zinc was applied, and a large piece of sponge over it, to absorb the discharge, and pressure was made with adhesive plaster. The following day she passed two motions per anum, and very little feculent matter came through the wound. The sloughy omentum was cut away.

Nothing material occurred until the 6th of January, when sickness and constipation took place, and every thing she took passed through the wound. By the 8th, the constipation and sickness were removed, and from this time she continued to improve. On the 7th of February, the wound was completely closed, and the natural passage restored.

REFERENCES TO THE PLATES.

Plate V. Contains representations of the Biliary Calculi, described in Mr. Brayne's paper, page 255.

Plates VI, VII and VIII, are illustrative of Dr. Davis's paper on the proximate cause of Phlegmasia Dolens, and are explained at page 459.

Plates IX and X, exhibit the Anatomical structure of the Eye, as described in Dr. Jacob's paper, page 457; and are explained at page 518.

Plate XI, represents the preternatural growth in the lining membrane covering the trunks of the vessels, proceeding from the arch of the aorta, which occurred in the case related by Dr. Yelloly, page 565. The explanation is given at page 569.

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INDEX

TO

VOLUME TWELFTH.

A.

Page

ALLAN, John, account of a case of complicated labour from locking of the heads of twins 366
Alpinus, Prosper, quotation from..... 317
Analysis of calculi, by *Dr. Prout*..... 395
Anatomy of the eye..... 487
Aneurism, a case of..... 12
——— axillary..... 531
——— inguinal..... 95
Arnott, James, M., on stricture of the urethra, cured by seton..... 351
Ascites, connected with utero-gestation..... 372
Axillary aneurism..... 531

B.

Bell, Charles, on the varieties of carcinoma mammæ..... 213
Biliary calculi, of extraordinary dimensions..... 255
Birt, George, on artificial dilatation of the female urethra.... 243
Bladder, sacculated state of..... ... 461
——— dilator of female..... 235
Boiling water, cases of children killed by swallowing..... 1
Bostock, Dr. John, on the products of inflammation..... 94
Brain, fœtal, on the destruction of..... 308

Page

Brayne, T., on cases of biliary calculi of extraordinary dimensions..... 255
Bronchocele, case of..... 310
Bronchotomy, a case of successful..... 27
Broughton, S. D. on the use of cubebs in gonorrhœa..... 99

C.

Cæsarean section..... 46
Calculi, biliary, of extraordinary size..... 255
——— vesical, on the extraction of, by dilatation of the urethra.....315. 381
Cancer of the breast..... 213
——— diseases resembling..... 268
——— of chimney-sweepers..... 296
Carotid, ligature of, for the cure of a large nævus maturnus.. 203
Catheter, portion of, extracted from the female bladder by a dilator..... 235
Caustic potash, its use in ununited fracture of the humerus... 189
Chapman, Thomas, on the removal of a catheter and stone from the female bladder by dilatation..... 24
Chimney sweepers' cancer..... 296
Cholera, epidemic, of India..... 359
Circulation, on the powers of..... 396
Clasp-knives swallowed..... 52
Compound fractures..... 167
Cooper, Sir Astley, account of removal of stones, &c. from the female bladder by dilatation..... 235. 381
Cormick, John, on the epidemic cholera of India..... 359
Cubebs, on its employment in gonorrhœa..... 99
Cummings, John, narrative of his case..... 70

D.

Davis, Dr. David D., on the proximate cause of phlegmasia dolens..... 419
Dilatation of the urethra..... 235. 315. 381
Dowler, Thomas, on the product of acute inflammation..... 86

Page
Dropsy connected with utero-gestation..... 372
Dunn, John, on compound fractures..... 167

E.

Earle, Henry, on bronchotomy..... 32
——- on ununited fractures..... 189
——— diseases resembling cancer..... 268
——— chimney-sweepers' cancer..... 296
Elliotson, Dr. John, on the medical properties of quinina.... 543
Exomphalos, case of strangulated..... 570
Extraction of calculi by dilatation..... 235. 315. 381
Eye, anatomy of..... 487

F.

Fœtal brain, on the destruction of..... 308
Fœtus, living, extracted from the uterus after the death of the mother..... 46
Fractures, ununited..... 189
——— compound..... 167

G.

Gibbs, Dr. Harry Leake, case of axillary aneurism..... 531
Gilder, S., on co-existence of vaccine disease and measles..... 186
Glandular tumor in the neck..... 247
Gonorrhœa, use of cubebs in..... 99
Gooch, Dr. Robert, on uterine hæmorrhage..... 152
Gore, Mr., case of strangulated exomphalos..... 570
Green, I. H., on the extraction of a living fœtus after the death of the mother..... 46
Gregory, Dr. James, on small-pox occurring after vaccination..... 324

H.

Hall, Dr. Marshall, cases of children killed by swallowing boiling water..... 1

Page
Hammond, Mr., on the destruction of the fœtal brain..... 308
Hæmorrhage, umbilical, case of..... 183
——————— uterine..... 152
Humerus, on ununited fracture of..... 189
Hunt, Dr. William S., case of successful bronchotomy..... 27

I.

Iliac, external artery tied..... 95
India, epidemic cholera of..... 359
Inflammation, on the product of..... 86
——————— state of vessels in..... 396
Inflation of the urethra..... 315
Inguinal aneurism..... 95
Injuries of the pelvis..... 520
Integuments of nose and face, on diseases of..... 280
Iodine, its use in Bronchocele..... 310
Irritation, on the influence of local..... 268

J.

Java pepper, on its employment in gonorrhœa..... 99

K.

Kerrison, Dr. Robert Masters, on the dilatation of the female urethra by inflation, for the extraction of calculi from the bladder..... 315
Knife swallower..... 52

L.

Labour, case of complicated..... 366
Langstaff, George, case of ascites connected with utero-gestation..... 372
Lara, Dr. B., letter from..... 64
Ligature of carotid artery..... 203

Page
Ligature of subclavian artery..... ..... 12. 531
Lips, on diseases of..... 271
Local irritation, influence of..... 268

M.

Mammæ, carcinoma..... 213
Marcet, Dr. Alexander, on a singular variety of urine..... 37
——— account of a man who swallowed a number of clasp-knives..... 52
Mayo, Charles, case of aneurism..... 12
Measles, conjoined with vaccine disease..... 186
Morbid alterations of structure..... 268

N.

Nævus maternus, case of..... 203
Neck, glandular tumor in 247
Nerve, case of wounded 208

P.

Paralysis, partial 105
Pelvis, on injuries of the 520
Pepper, Java, use in gonorrhœa..... 99
Philip, Dr. A. P. W. on the powers of the circulation..... 396
Phlegmasia dolens, on the proximate cause of..... 419
Pope, John, on sarsaparilla 344
Pout, G. on umbilical hæmorrhage..... 183
Powell, John, on rupture of the uterus..... 537
Powers of circulation 396
Prepuce, on diseases of 287
Prout, Dr. analysis of calculi 395
——— on the chemical properties of a variety of urine.... 43
Puberty, case of premature 76

Q.

Page
Quinina, on the medical properties of 543

R.

Roots, Dr. Henry S., on bronchocele 310
Rupture of uterus 537

S.

Salmon, Edward, case of inguinal aneurism 95
Sarsaparilla, on different kinds of 344
Scalding water swallowed, effects of 1
Seton, its employment in ununited fractures 189
Shaw, John, on partial paralysis 105
—— on the stricture of the urethra 461
Small-pox occurring after vaccination 324
South, John Flint, on premature puberty 76
Stanley, Edward, on the effects of swallowing boiling water 8
Stricture of urethra 461
Structure, morbid alterations of 268
Subclavian artery, ligature of 12. 531
Swan, Joseph, on injuries of the pelvis 520

T.

Thumb, case of wounded nerve of 208
Tongue, on diseases of 283
Trachea, removal of a pebble in, by bronchotomy 27
Tumor, glandular, in the neck 251

U.

Umbilical hæmorrhage, fatal case of 183
Ununited fractures 189

Page
Urethra, dilatation of 235. 351. 461
Urine, on a singular variety of 37
Uterine hæmorrhage..... 152
Utero-gestation, complicated with ascites 372
Uterus, rupture of 537

V.

Vaccine diseases co-existing with measles..... 186
Vaccination followed by small-pox 324
Vessels, state of, in inflamed parts..... 396
Vincent, J. P., case of large glandular tumor in the neck removed by 247

W.

Wardrop, James, case of a large nævus maternus on the head, cured by tying the carotid artery..... 203
——— case of wounded nerve of the thumb..... 205

Y.

Yelloly, Dr. John, case of preternatural growth in the lining membrane of arterial trunks..... 565

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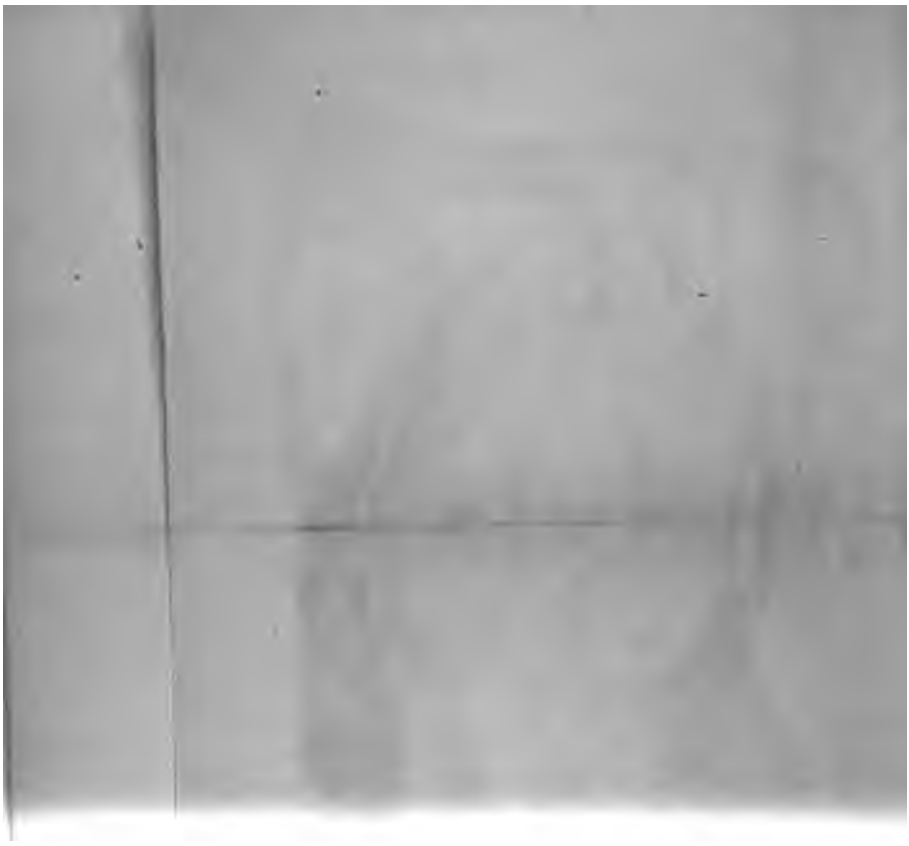

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Fig. 4. Fig. 3.

Fig. 2.

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Fig. 2.
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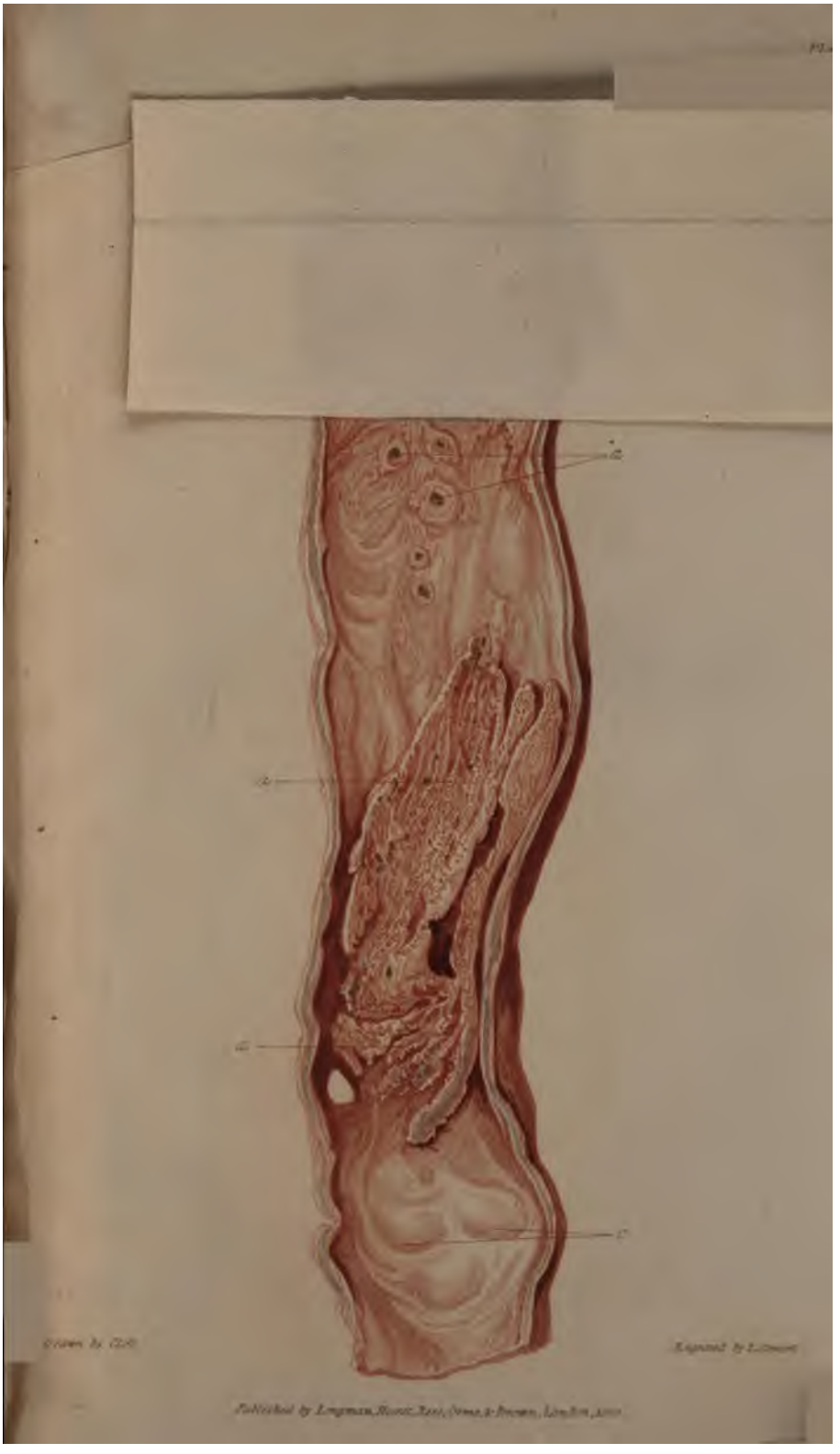

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Fig. 1.

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Fig. 3.

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Fig. 6.

Fig. 7.

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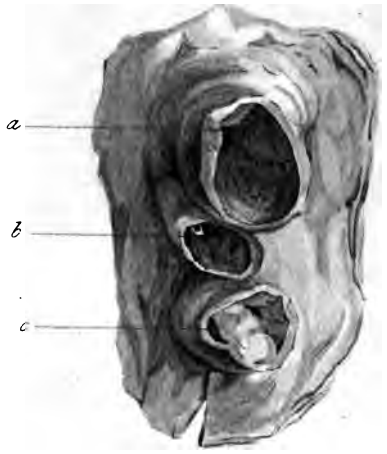

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